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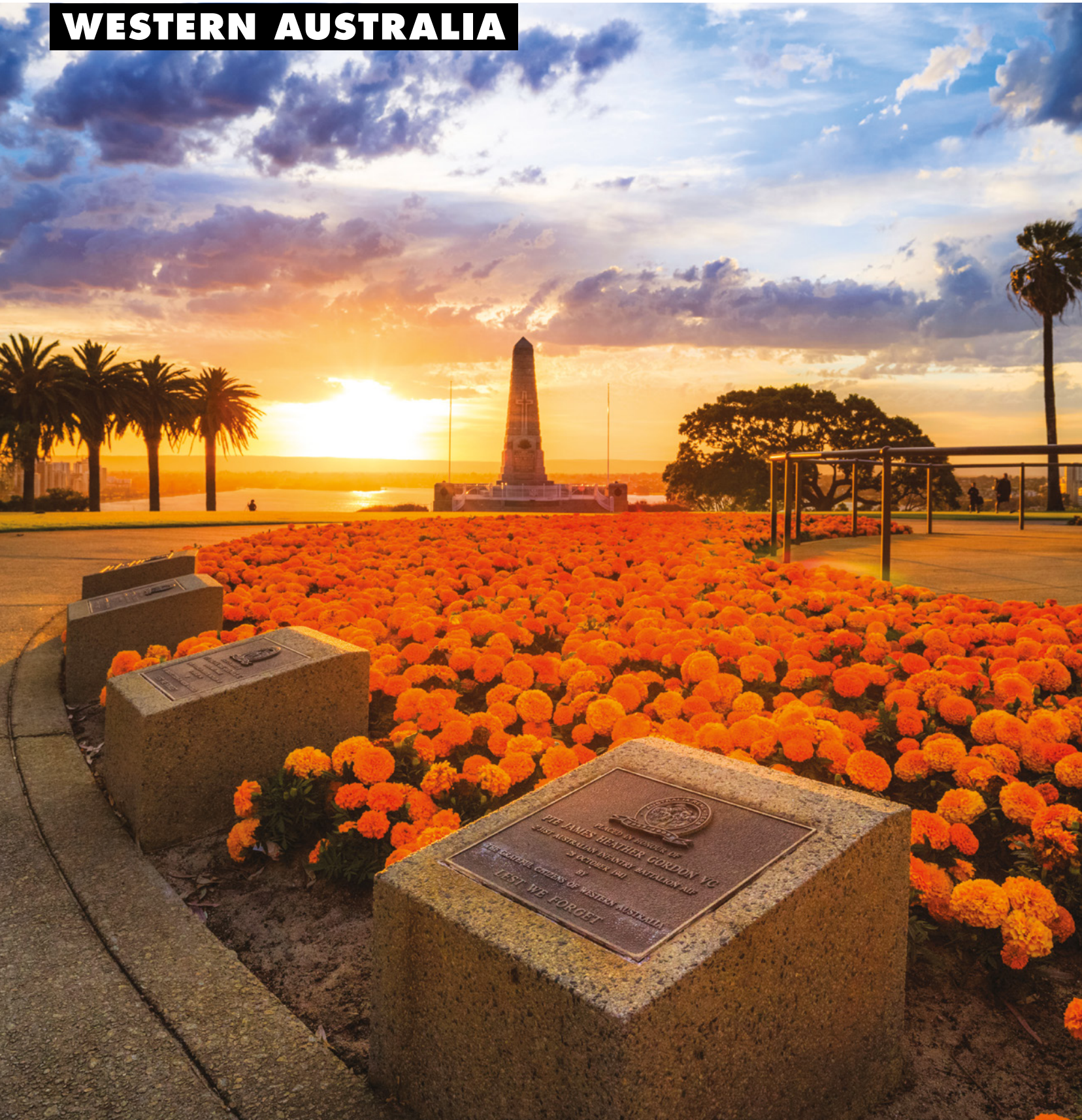
HUMANITIES & SOCIAL SCIENCES 10

WESTERN AUSTRALIA



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HUMANITIES & SOCIAL SCIENCES 10

WESTERN AUSTRALIA

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HUMANITIES & SOCIAL SCIENCES 10

WESTERN AUSTRALIA

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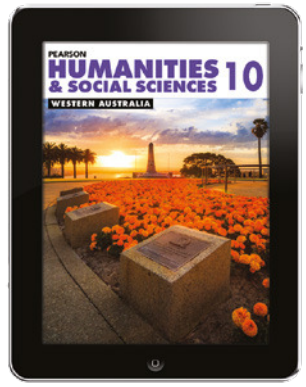

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Contents

HISTORY

ADDITIONAL EBOOK CHAPTERS

How to use this book

The Student Book is divided into the four subject strands.

CIVICS AND CITIZENSHIP

ECONOMICS AND BUSINESS

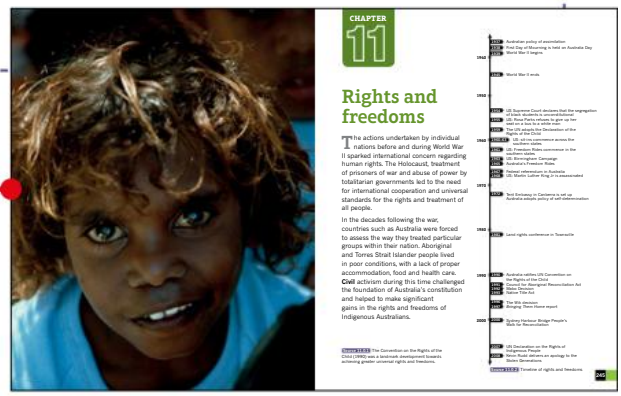
GEOGRAPHY

HISTORY

Each chapter is divided into unit spreads of between two and six pages. The features in each chapter are outlined below.

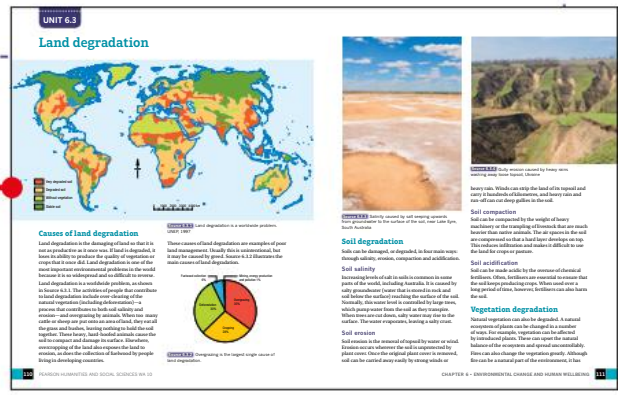
Chapter opener

Each chapter opens with an engaging image and an introduction related to the chapter content, providing a basis for inquiry into the topic. History chapter openers also feature a timeline showing the key dates of the period covered in the chapter.



Unit content

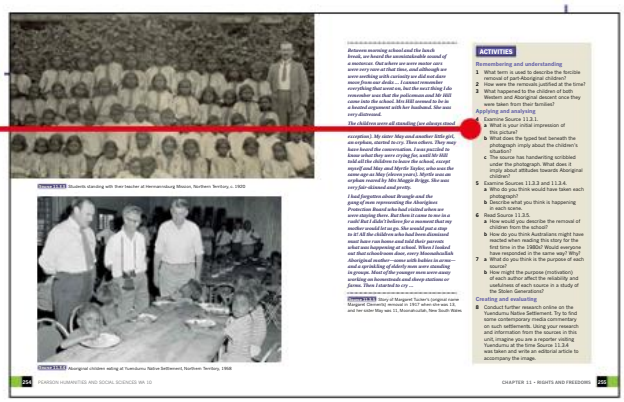
Content in each unit covers one or more 'Knowledge and understanding' content descriptions in the Humanities and Social Sciences syllabus. The core text is supported by primary and secondary written and visual sources. Engaging facts in 'Did you know?' features will stimulate further interest and provide additional information.



Online resources

Activities

Each unit closes with questions based on the core text and sources. The questions are categorised under Bloom's Revised Taxonomy, moving from lower order to higher order questions. The activities help build content knowledge and skills capabilities.

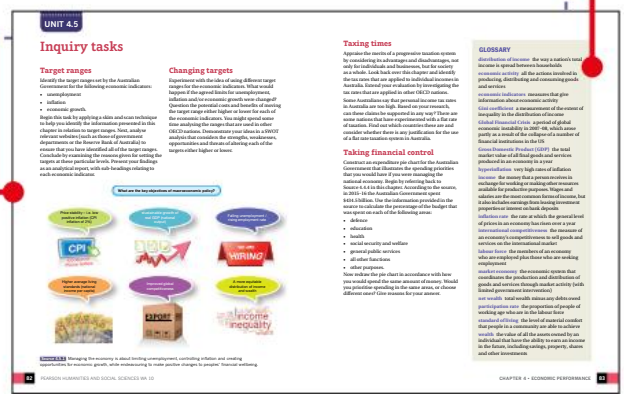


Additional eBook chapters

The eBook contains additional chapters for greater choice in covering content for the Western Australia School Curriculum and Standards Authority Humanities and Social Sciences syllabus. These additional chapters include all the same features as the core chapters.

Inquiry tasks and glossary

Each chapter closes with a set of inquiry tasks based on the chapter content to consolidate learning. The scaffolded tasks provide students with the opportunity to develop critical thinking and apply the 'Humanities and Social Sciences skills' as outlined in the Western Australia Humanities syllabus. The varied tasks are designed to appeal to different learning preferences, some of which may incorporate further research, as well as pair and group work. The glossary defines terms used within the chapter to assist with text comprehension.



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ANU: Trends in Australian Political Opinion: Results from the Australian Election Study, 1987–2013/The Australian National University, p. 59.

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Australian Bureau of Statistics: Australian National Accounts: National Income, Expenditure and Product, September quarter 2015, cat. no. 5206.0, Consumer Price Index, September quarter 2015, cat. no. 6401.0, p. 68b; Labour Force, January 2016, cat. no. 6202.0, p. 71; Housing Occupancy and Costs, 2013–14, cat. no. 4130.0, p. 92.

Australian Electoral Commission (AEC): Museum Victoria/Australian Electoral Commission, p. 264.

Australian Human Rights Commission: Inquiry Questionnaire for Children and Parents in Detention, Australia 2014, 327 respondents (Note: respondents can provide multiple responses)/The Forgotten Children: National Inquiry into Children in Immigration Detention 2014/Australian Human Rights Commission 2014, p. 43; Inquiry Questionnaire for Children and Parents in Detention, Australia 2014, 723 respondents (Note: respondents can provide multiple responses)/The Forgotten Children: National Inquiry into Children in Immigration Detention 2014/Australian Human Rights Commission 2014, p. 48.

Australian Strategic Policy Institute: A web of harms: serious and organised crime and its impact on Australian interests by David Connery, Clare Murphy and Hayley Channer, ASPI, Canberra, 2015: 5. Available at https://www.aspi.org.au/publications/aweb-of-harms-serious-and-organised-crime-and-its-impact-on-australianinterests/SR81_Web_Harms.pdf, p. 55.

Australian Taxation Office: p. 79l.

Australian War Memorial: pp. 222, 233, 234; Maurice Bramley, Department of National Service, p. 232**;** A F Hobson, p. 230; Defeat, Singapore by Harold Abbott, 1946 of Infantryman looking over his shoulder at a burning building in the background – Fall of Singapore, February 1942, p. 204; Thomas Fisher, p. 229; Herald Newspaper, p. 235; He's coming south 1942 by Unknown, p. 236; Frank Hurley, pp. 211, 221; It can happen, it does happen, 1943 by Malcolm R Warner, HQ Victoria L of C Area and LHQ Cartographic Coy, p. 237l; Geoffrey McInnes, p. 237r; Meal time at Changi 1943 by Murray Griffin, pp. 223, 225; Damien Peter Parer, p. 228; Ringed with menace! by James Northfield and Beaufort Division of the Department of Aircraft Production, 1942, p. 243.

Australia's Department of Defence: CPL David Said, p. 36; WO2 Gary Ramage/Australian Government Department of Defence/Commonwealth of Australia 2015, p. 40.

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Copyright Agency Ltd: The Australian: "Race tour bus driver walks out", 22 February 1965, pp. 261, 269.

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Department of Foreign Affairs and Trade: Ness Kerton for AusAID/Australia's Department of Foreign Affairs and Trade, p. 42.

Department of Sustainability, Environment, Water, Population and Communities: Commonwealth of Australia 2014, p. 285.

Fairfax Photo Sales: Angela Wylie/Fairfax Media Publications, p. 48; Jay Cronan, p. 341; Robert Pearce, p. 148; The Age: Jim McEwan, p. 266.

FAO - Food and Agriculture Organization of the United Nations: State of the World's Fisheries and Aquaculture, 2012, p. 115; Global Forestry Resources Assessment 2010, FAO Forestry Paper 163. This is an adaptation of an original work by FAO. Views and opinions expressed in the adaptation are the sole responsibility of the author or authors of the adaptation and are not endorsed by FAO, p. 325.

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Great Artesian Basin Strategic Management Plan: Focus & Prospects 2008–2015 © 2009 Great Artesian Basin Coordinating Committee, p. 159.

GreenGroup Holdings 2014: p. 108.

GRID-Arendal: pp. 181t, 215t; Riccardo Pravettoni, p. 187.

Grosvenor Books (now Australian/Pacific Centre MRA-IC) Armagh: Margaret Tucker, If Everyone Cared: Autobiography of Margaret Tucker MBE, Grosvenor House, 1983, (pp. 90-94 in original), p. 255.

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International Monetary Fund: p. 76.

John Curtin Prime Ministerial Library: Austerity speech by John Curtin, 3 October 1942, p. 235; John Curtin Prime Ministerial Library. Records of the Curtin Family. PM John Curtin shaking hands with General Douglas MacArthur, Sydney 8 June 1943. JCPML00376/69, p. 216br; "The Task Ahead" by John Curtin, First published in the Melbourne Herald, 27 December 1941/John Curtin Prime Ministerial Library, p. 216.

Lochman Transparencies: p. 146b.

Lowy Institute for International Policy: 'Are Australians Disenchanted with Democracy?' by Alex Oliver, p. 58.

Metropolitan Washington Council of Governments: Schueler, Thomas. 1987. Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban BMPs., Washington, DC., p. 174b.

Mitchell Library, State Library of NSW: Courtesy Tribune / SEARCH Foundation, [ON 161/675/37], p. 272.

NASA: p. 122; NASA/GSFC/METI/ERSDAC/JAROS and U.S./Japan ASTER Science Team, p. 138;

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National Archives of Australia: pp. 253, 273; National Archives of Australia A1200, L28240, p. 254b.

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NSW Government - Office of Environment and Heritage: The Great Eastern Ranges Initiative, p. 339.

OECD: (2016) General government debt (indicator). doi: 10.1787/a0528cc2-en (Accessed on 09 May 2016), p. 72b; (2015), Government at a Glance 2015, OECD Publishing, Paris. DOI: http://dx.doi.org/10.1787/gov_glance-2015-en, p. 75r ; Human Development Report 2015: Work for Human Development/United Nations Development Programme, (2016), Better Life Index, http://www.oecdbetterlifeindex.org (accessed May 19, 2016), Environmental Performance Index 2016, Yale Center for Environmental Law and Policy, p. 68t.

Pearson Asset Library: magemore Co., Ltd, p. 33 (Indonesian flag).

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Reserve Bank of Australia: Australian Bureau of Statistics/Reserve Bank of Australia, p. 69t; Australian Securities Exchange and Bloomberg/Reserve Bank of Australia, p. 90; RBA Preliminary Annual Database for the period 1901–66. ABS Quarterly Labour Force Survey for the period 1967–77. ABS Monthly Labour Force Survey for the period 1978–2000, p. 201l.

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Society for Children and Youth of BC: p. 50.

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State Library of Victoria: "Scene at the Changi P. O.W. Camp", Argus Newspaper Collection of Photographs, State Library of Victoria, 1945, p. 224t.

State Library of Western Australia: 061155PD, p. 250.

Swiss Federal Research Institute WSL: Konrad Steffen, University of Colorado and WSL Switzerland, p. 282.

The Australia Institute: p. 54.

The State Museum Auschwitz-Birkenau: p. 239t.

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Trees for the Evelyn & Atherton Tablelands (TREAT): p. 336.

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UNStats—United Nations Statistics: The World's Women 2010: Trends and Statistics/United Nations, p. 182.

UNICEF Australia: p. 39.

Union of Concerned Scientists: Justin Bilicki, p. 127.

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US Geological Survey: pp. 135b; 135t.

Wilson Wetlands Action Group Inc: p. 309l.

Woods Hole Oceanographic Institution: Tom Kleindinst, p. 279.

World Bank Group: Doing Business 2016: Measuring Regulatory Quality and Efficiency. Washington, DC: World Bank. DOI: 10.1596/978-1-4648-0667-4, pp. 72t, 163t; (2013). "World Development Indicators 2013." Washington, D.C.: World Bank. http://data.worldbank.org. Accessed October, 2013 and Household Income and Wealth, Australia, 2013-14/cat. no. 6523.0/Australian Bureau of Statistics, p. 74.

The World Top Incomes Database: Facundo Alvaredo, Anthony B. Atkinson, Thomas Piketty and Emmanuel Saez, http://topincomes.g-mond.parisschoolofeconomics.eu, p. 213.

Yad Vashem Photo Archive: p. 239b.


人民力量
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ONLY ONE

CHAPTER 1

Systems of government

Democracy is exercised in varying ways throughout the Asia–Pacific region. The region comprises an extensive range of ethnic and religious traditions that significantly impact upon the way that democracy is implemented. Like Australia, the nation states of China, Japan, India and Indonesia all enforce the importance of their written **constitutions**. They seek to provide peaceful, fair and representative elections that align practically with their unique population requirements. China differs the most significantly from its neighbours through the dominance of the Chinese Communist Party. It prevents China from holding legitimate multiparty elections and experiencing true representation of the people through its parliament.

Source 1.0.1 Pro-democracy demonstrators gather to mark one year since the start of mass pro-democracy rallies calling for free leadership elections in Hong Kong on 28 September 2015. The 2014 Occupy protests began after China's central government said it would allow a popular vote for the Hong Kong leader in 2017, but insisted that candidates were vetted.

UNIT 1.1

Australia's system of government

Australia is a **constitutional monarchy** and representative democracy. It is part of the Commonwealth of Nations, with Queen Elizabeth II serving as its head. The Governor-General is the Queen's representative who acts on the advice of the elected parliament. Parliament in Australia is regarded as sovereign because it represents the direct interests of the Australian people.

The Australian Constitution

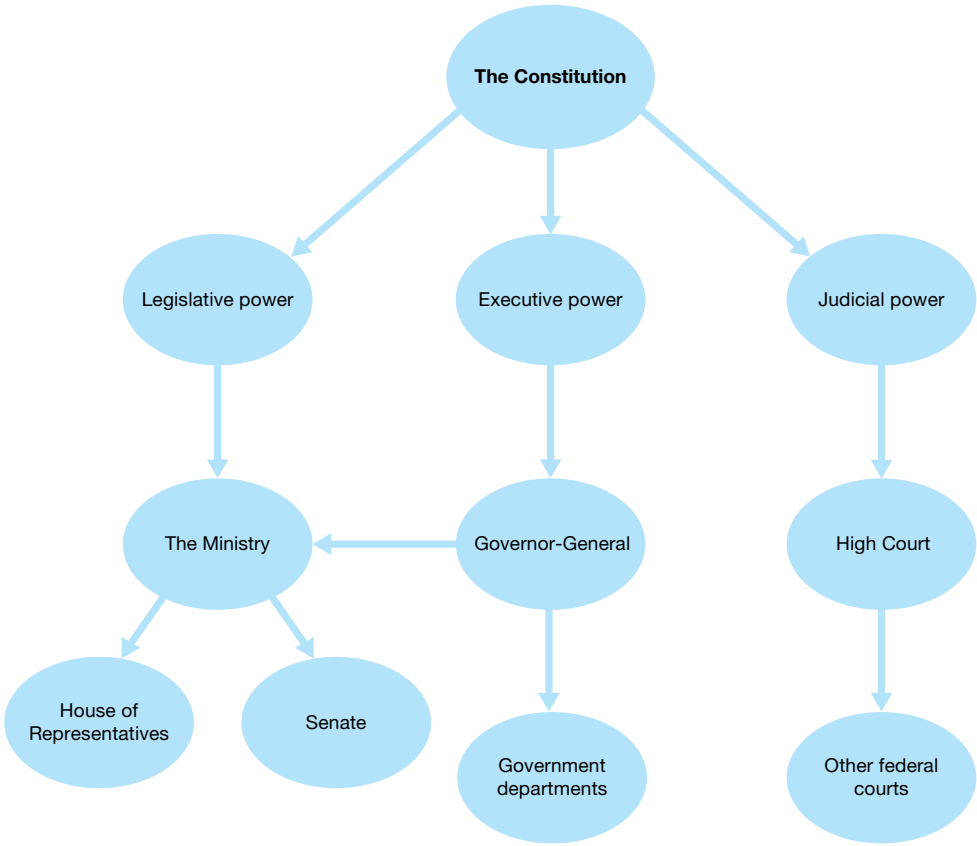
The Australian Constitution embodies the values of Australian democracy. It was enacted on 1 January 1901 and established the three arms of government in Australia (federal, state and local) and some of the processes and procedures of the Australian system of government.

The Australian Constitution can only be changed by a **referendum** after the proposed change is approved as a bill by the federal parliament. How the constitution is interpreted can be decided by the High Court in response to disagreements over the meaning of the constitution and how it should be applied.

The Governor-General

The Governor-General is the Queen's representative in Australia, appointed on the advice of the Prime Minister. Under the Constitution, the Governor-General's powers and duties include summoning and dissolving parliament, assenting to bills, appointing ministers, setting up departments of state and appointing justices of the High Court or federal judges. There is no specific term of office for the Governor-General.

Source 1.1.1 The colonies collectively became states of the Commonwealth of Australia on 1 January 1901, when the Constitution of Australia came into force. Celebrations included illuminating Sydney Post Office with the lettering 'Welcome to our Governor General, God save the Queen'.



Source 1.1.2 The Australian system of democracy

Parliament

According to Section 1 of the Australian Constitution, the Australian Parliament consists of:

- the Queen, represented by the Governor-General
- the Senate (upper house)
- the House of Representatives (lower house).

Parliament is responsible for **legislation** and providing members of the executive. The political party who wins the most seats in the House of Representatives forms government.

Separation of powers

Separation of powers is a key feature of the Australian democratic system. The system was designed to provide checks and balances for those in positions of power. Power is divided between the executive that administers the law, the legislature that makes the laws and the judiciary that is responsible for the court system. The court system's purpose is to interpret and apply the law, including, in the case of the High Court, the Constitution. It enforces the notion that the rule of law is supreme in Australia. This means that no one is above the law, including the government.

The executive

The executive is made up of the Prime Minister and the Cabinet—they take care of the running of the government. The Prime Minister selects the Cabinet (up to 30 ministers) and together they decide major policy and legislative proposals. Australia's Cabinet must answer to the elected parliament, this is known as 'responsible government'. This normally occurs during question time in parliament or through parliamentary committees.

The legislature

The legislature makes laws. The federal parliament makes federal laws within its power, which apply to all of Australia. Australia has a **bicameral** parliament, meaning there are two houses of parliament: an upper house and a lower house. For bills to be passed they must be supported by both houses.

Bills are normally introduced in the House of Representatives. They can be introduced in the Senate, but this is rare. Committees in both houses analyse proposed laws and report back on their findings.

Once passed by the House of Representatives, the Senate considers the bill. It is often easier to pass legislation through the lower house, as this is where the government

Source 1.1.3 The House of Representatives in session

in power sits. Once both houses have passed a bill, the Governor-General gives it royal assent on behalf of the Queen, then it is published and enacted into law.

The judiciary

The primary role of the federal court system is to ensure the laws of Australia are obeyed. The rule of law is a key feature of the Australian democratic system. If the government is found to have acted unconstitutionally it can be prosecuted.

There are levels within the court system. The High Court was established by the Constitution as Australia's highest court. Federal courts are set up by parliament. They can deal with any manner of the law, including criminal, family and civil matters.

Judges (who interpret the law) are appointed by the Governor-General on the advice of the Prime Minister and Cabinet. This means there is not entire separation of power between the executive and the judiciary.

To maintain independence the government cannot remove judges from their positions. Judges can only be dismissed by the Governor-General on the request of both houses of parliament.

Australia's democracy values the right to a fair trial. The court system works on a **presumption of innocence** unless proven guilty. According to Section 80 of the Constitution, Australians have the right to trial by jury whereby their fellow citizens decide their innocence or guilt.

Democratic elections

Free and open elections are crucial to a thriving democracy. Voting in Australia is compulsory for citizens aged 18 and over. Votes are cast by secret ballot.

Australians vote in federal, state and local elections. Voting in local elections is not compulsory.

Source 1.1.4 Members of the public vote at the Cottesloe Civic Centre, Perth, Western Australia, in the federal election of 2 July 2016

Election to the House of Representatives

The House of Representatives has 150 members. The states are broken up into constituencies of roughly equal population, with one person representing one electorate.

Members are voted in for a three-year term through a preferential voting system.

Election to the Senate

The Senate has 76 members. Each state has 12 representatives and each territory has two.

The Senate uses a proportional voting system. Senators are elected for six years, with half of the senators facing re-election every three years.

ACTIVITIES

Remembering and understanding

1. In what way/s does a complete separation of powers not exist within Australia's democracy?
2. How does Australia's system of democracy ensure that our government is held accountable?

Applying and analysing

3. Create a flow chart that demonstrates, in some detail, the path that a bill has to take in parliament in order to become a law.

Evaluating and creating

4. Conduct a line debate with your fellow students on the topic 'Does the Governor-General play a significant role in Australia's democracy?'
5. Create a book for primary school students that explains the roles and responsibilities of either the executive, legislature or judiciary.

UNIT 1.2

China

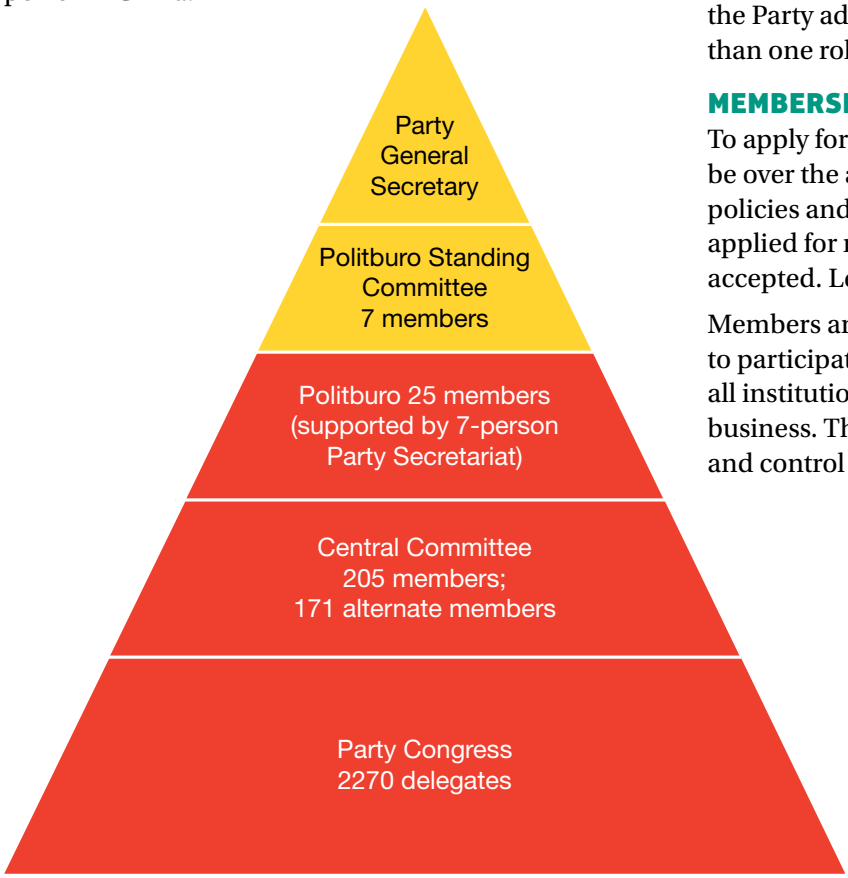
China is a one-party state ruled by the Chinese Communist Party (CCP). It is governed under the 1982 Constitution, the fifth constitution since the Communist Party came to power in 1949. The CCP has over 85 million members.

The Chinese Government broadly operates under two key areas: the Party and the State. The two systems overlap, with Party members serving in key positions within the State.

The Party apparatus

Constitution

Under the Chinese Constitution the CCP is the leading political party. The CCP controls society at all levels. The Constitution rejects the notion of the separation of powers. Instead, the Chinese Parliament is a **unicameral** legislature, meaning it is the only law-making body. In theory this power lies with the parliament, called the National People's Congress (NPC). However, the CCP is the real instrument of power in China.



Source 1.2.1 The structure of the Communist Party

The Chinese Communist Party

The CCP represents about 6 per cent of China's population of approximately 1.34 billion people. It meets every five years. The CCP Constitution is separate to the State Constitution. It proclaims 'the realisation of communism to be its highest ideal and ultimate goal'.

NATIONAL PARTY CONGRESS

At the five-yearly National Party Congress the following things occur:

- election of a new Central Committee
- Central Committee then elects the 25 members of the Politburo
- seven members of the Politburo Standing Committee are elected
- a General Secretary is chosen from the Politburo Standing Committee; this is the leader of the CCP and therefore the leader of China.

A Party Secretariat is then settled upon. The Secretariat is responsible for the day-to-day running of the Party administration. Some members serve more than one role within the Party structure.

MEMBERSHIP OF THE CCP

To apply for membership of the CCP, citizens must be over the age of 18 and committed to the Party's policies and programs. In 2011, 21.6 million people applied for membership with less than 15 per cent accepted. Less than a quarter of members are women.

Members are organised into a branch, cell or unit to participate in Party activities. Party units exist in all institutions and organisations, including private business. The Party bodies wield significant power and control all avenues for advancement.

Source 1.2.2 Chinese national flags are hung along a street in Shanghai to commemorate Chinese National Day which is celebrated annually on 1 October. This marks the date the People's Republic of China was founded in 1949.

Party leadership bodies

THE POLITBURO STANDING COMMITTEE

The Politburo Standing Committee (PSC) is the most senior decision-making body in China. There are seven members, each ranked and assigned a specific portfolio:

- Party General Secretary: CCP Chairman and State President; oversees China's foreign policy
- Premier of the State Council: China's top economic official
- Chairman of the Standing Committee of the NPC: China's unicameral legislature
- Chairman of the Chinese People's Political Consultative Conference (CPPCC) National Committee: responsible for outreach to non-Communist groups and state-sanctioned religious associations
- Head of the Party Secretariat: spreads **ideology** and **propaganda**
- Party's Central Disciplinary Inspection Commission (CDIC): polices the Party's ranks for corruption
- State Council Vice-Premier: assists the Premier with his duties.

THE POLITBURO

Politburo members who represent Party interests are given more senior responsibilities than those who represent State interests.

Three portfolios are considered the most crucial to the maintenance of Party rule:

- Head of the Organisation Department: **recruits**, trains and develops new Party members
- Head of the Propaganda Department: controls all media and sets the official message of the Party

Source 1.2.3 People watch a speech by Xi Jinping, President of China and head of China's ruling Communist Party, in Beijing, China, 15 November 2012. Xi heads the Standing Committee of the Party's Politburo.

- Head of the Central Commission of Politics and Law: the internal security apparatus including the Supreme People's Court, the State Minister for Justice and Minister of State Security, under the control of the Politburo.

The State apparatus

The State apparatus in China is not as powerful as the Party apparatus. Party members fill many of the committees and the roles within the State. This ensures that the Party control all areas of public life.

The State President

The State President is China's head of state. Since 1993, the State President is also the General Secretary of the CCP. The Party **nominates** the candidates for President and Vice-President. They are elected by the NPC. Under the State Constitution the President is accountable to the NPC. In reality, the President is the General Secretary of the CCP, which outranks the authority of the NPC.

The President announces law, appoints and dismisses key government positions, receives foreign dignitaries and diplomats, and signs foreign treaties. It is the role of the President to announce a state of emergency, issue an order of mobilisation or a declaration of war.

The State Council

The State Council is also known as the Central People's Government. Under the State Constitution it is 'the highest organ of state administration.' Officially, it implements the policies of the CCP and enacts laws passed by the NCP. In reality, the State Council manages the day-to-day administration of the economy.

The Premier leads the State Council, and is second in command of the PSC. The President appoints the Premier.

When in full session, the State Council is similar to a Cabinet. It has a vast array of organisations under its supervision.

The National People's Congress

According to the State Constitution, the NPC is 'the highest organ of state power.' It has the power to:

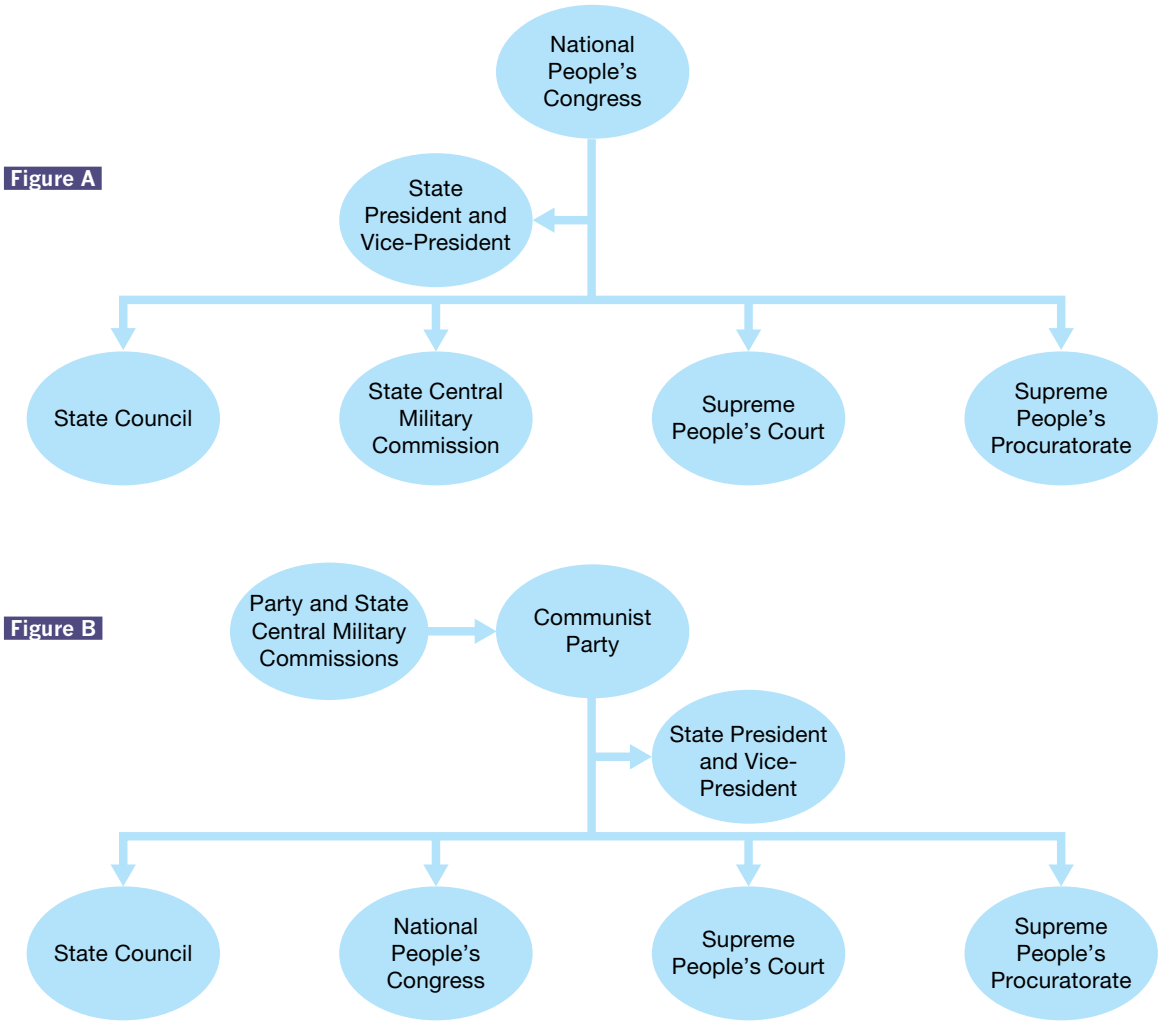
- enact and revise laws
- propose **amendments** to the Constitution (via the standing committee)
- formulate, revise and supervise implementation of the Constitution
- **ratify** and annul treaties
- approve the State Budget and plans for economic and social development
- elect and dismiss top officials of the state and judiciary
- supervise the work of state officials.

In practice, it is the CCP that fulfils these roles. The NPC acts as a body to approve the Party decisions.

Approximately 3000 delegates serve five-year terms in the NPC. The meeting of Congress lasts ten days. Congress members are nominated by the CCP and elected by 35 electoral units. These units represent **provinces** and autonomous regions throughout China.

Due to the brief sitting of the Congress, the Standing Committee fulfils much of the NCP's work. The Standing Committee meets every two months and has 161 members. The highest-ranking official in the committee is the third-ranked CCP official.

Source 1.2.4 Premier Li Keqiang delivers a speech to the 12th NPC at the Great Hall of the People, Beijing.



Source 1.2.5 An analysis of the power structure in China. Figure A shows how the national-level political power structure should work as described in Chapter 3 of the 1982 State Constitution. Figure B demonstrates the political structure as it works in practice.

The Chinese People's Political Consultative Conference

The CPPCC is a body that allows other political parties and social organisations to take part in the running of the state. They engage in political consultation with the Party. The CCP asserts that the CPPCC is a core part of China's '**socialist** democracy'.

In theory, the CPPCC gives non-communists a voice, but carries no weight in the Chinese political system.

The minor political parties

There are eight minor political parties in China. They must accept the permanent leadership of the Chinese Communist Party and cannot act as opposition parties.

The parties are allowed to exist to show that China is a multiparty cooperative system. The total membership of the minor parties is less than one million people. The heads of the parties can serve in the position of vice-chairperson of the National People's Congress.

Deliberating on bills

Sponsors of **motions** or bills submit their explanations to the NPC to be investigated by special committees. Once a committee writes a report, it is submitted to the NPC for voting by show of hands or ballot. If the majority is in favour, the bill is passed.

Amendments to the Constitution can only be proposed by the NPC Standing Committee or more than one-fifth of the deputies to the NPC. If there are at least two-thirds in favour the amendment will be adopted.

The judiciary

The Chinese judicial system is not independent of the government.

The Supreme People's Court is the highest court. It reports its work to the NPC and the Standing Committee. Its functions include:

- hearing appeals from lower courts
- approving the death sentence
- supervising the trials in other courts
- discovering mistakes made in local courts and forcing a rehearing of the case.

The principles of the court are:

- equality: all people are equal before the law
- open trials: trials are open, except those involving state secrets or the trials of minors
- defence: the accused is entitled to hire someone to defend them
- system of collegiate panels: panels consist of 1–3 judges and 2–4 people's assessors. Appeal cases are heard by 3–5 judges. The panel is presided over by a judge
- the system of challenge: in a conflict of interest, people can ask for the judicial officers to be removed. If judicial officers feel they have a conflict of interest they need to withdraw
- independence in trials.

WEAK RULE OF LAW

The Party supports rule by law, not the rule of law. The Party therefore is not subject to the confines of the law. Party commissions oversee police, prosecutors and the courts. They can intervene in matters to ensure that the Party's interests are met.

Elections in China

Given the size of China's population, staging elections is a huge task. The Party has begun experimenting with more direct forms of voting at a village and local level. Electoral reform is a slow process, with the Party not willing to concede much of their power. China's voting procedures remain a mix of indirect and direct voting.

Source 1.2.6 Officials count votes after rain-soaked elections in the village of Wukan on 31 March 2014.

Elections for China's highest positions start at local and village elections. There are two opportunities for people to vote:

- A series of representative elections where people directly vote for nominated candidates. Local election committees carry out the elections. In urban areas the local elections are divided into residential areas. The elected candidates are primarily responsible for their local communities.
- Elections to the People's Provincial Congresses that represent 23 provinces, five autonomous regions, four **municipalities**, special administrative regions and the armed forces. Once the congresses have been decided they elect 3000 members to the NPC.

The NPC elects the President, Premier, Vice-President and the individuals for other important positions within the Chinese Government.

Source 1.2.7 Chinese minority delegates in traditional dress arrive before the opening of the fourth session of the 12th National People's Congress (NPC) at the Great Hall of the People in Beijing, China, 5 March 2016. Delegates represent 55 minority ethnic groups.

ACTIVITIES

Remembering and understanding

1 Outline how the Chinese Constitution rejects the idea of a separation of powers.
2 What is the total membership of the minor parties in China?

Applying and analysing

3 List the reasons why you think the Chinese Communist Party rejects so many applications for membership to the Party.
4 Draw a diagram to illustrate the Chinese Communist Party's influence on all aspects of government in China.
5 Use a Venn diagram to show the ways that China's highest court, the Supreme People's Court, is both similar and different to Australia's High Court.

Evaluating and creating

6 Research further into the role of propaganda and publicity in the CCP and then write a job description for the Head of the Party Secretariat.
7 Design an election poster for the Chinese Communist Party. Write a description of the poster that explains the images, words and colours you used.

UNIT 1.3

Japan

Japan is a democratic constitutional monarchy with a parliamentary government known as the Diet. The Prime Minister represents the Diet.

Japan's government structure has three tiers: national, prefectural and local. There are 47 prefectures and 1741 local municipalities. Elected assemblies represent each tier of government. Japan does not have a federal system like Australia.

The Japanese Constitution

The Constitution came into effect on 3 May 1947. It contains 103 articles, including a pacifist **doctrine**. No amendment has ever been made to it.

The Constitution specifies that the majority of Cabinet members must be elected members of parliament. The Prime Minister can also appoint non-politicians to the Cabinet and as special ministers of state.

The no war clause

In the wake of World War II, Article 9 of the Japanese Constitution contains the 'no war' clause. It consists of two important paragraphs:

- The Japanese people 'forever renounce war as a sovereign right of the nation and the threat or use of force as a means of settling international disputes.'
- 'Land, sea and air forces, as well as other war potential will never be maintained.'

The clause was included to demonstrate in law that Japan does not seek war as a viable option. It is also thought that it was a way to preserve the imperial throne—even if only as a symbol.

The Emperor

Under the previous Meiji Constitution (1890–1947) the Emperor of Japan was the sovereign power. In 1946 Emperor Hirohito renounced his status as divine ruler and major constitutional reform was introduced. The current Constitution says the emperor is the 'symbol of the state' and the 'unity of the people'. The word *shōchō* is used to describe the Emperor as neither head of state nor sovereign.

The result is that the role is symbolic, with no governmental power.

Source 1.3.1 Emperor Akihito and Empress Michiko of Japan

Separation of powers

The executive

Executive power is vested in the Cabinet, led by the Prime Minister. The Prime Minister appoints and dismisses the Cabinet ministers. The Cabinet has the Cabinet Office and 11 ministries.

A Board of Audit audits all accounts of the state and other public corporations and agencies. It is a constitutionally independent organisation.

The role of the Prime Minister includes:

- representing the Cabinet
- submitting bills to the Diet
- reporting to the Diet on general national affairs and foreign relations
- exercising control and supervision over various administrative branches.

There is no fixed term for the office of Prime Minister.

The Cabinet

The Cabinet is collectively responsible to the Diet. There are never more than 17 ministers in the Cabinet. When the term of the Prime Minister ends, the Cabinet is required to resign.

The legislature

The Diet or *Kokkai* is Japan's national parliament. Article 41 of the Constitution describes the National Diet as the 'highest organ of state power' and 'the sole law-making organ of the state'. There are 300 members in the Diet.

Responsibilities of the Diet:

- making laws
- approving the national budget
- ratifying treaties
- initiating draft amendments to the Constitution (once finalised they are taken to the population in a referendum)
- conducting investigations into the government
- dissolving the government if it passes a no-confidence motion introduced by 50 members of the House of Representatives.

Japan's legislature is bicameral. It consists of the House of Councillors (upper house) and the House of Representatives (lower house). Both are elected bodies.

THE HOUSE OF REPRESENTATIVES (*SHŪGIIN*)

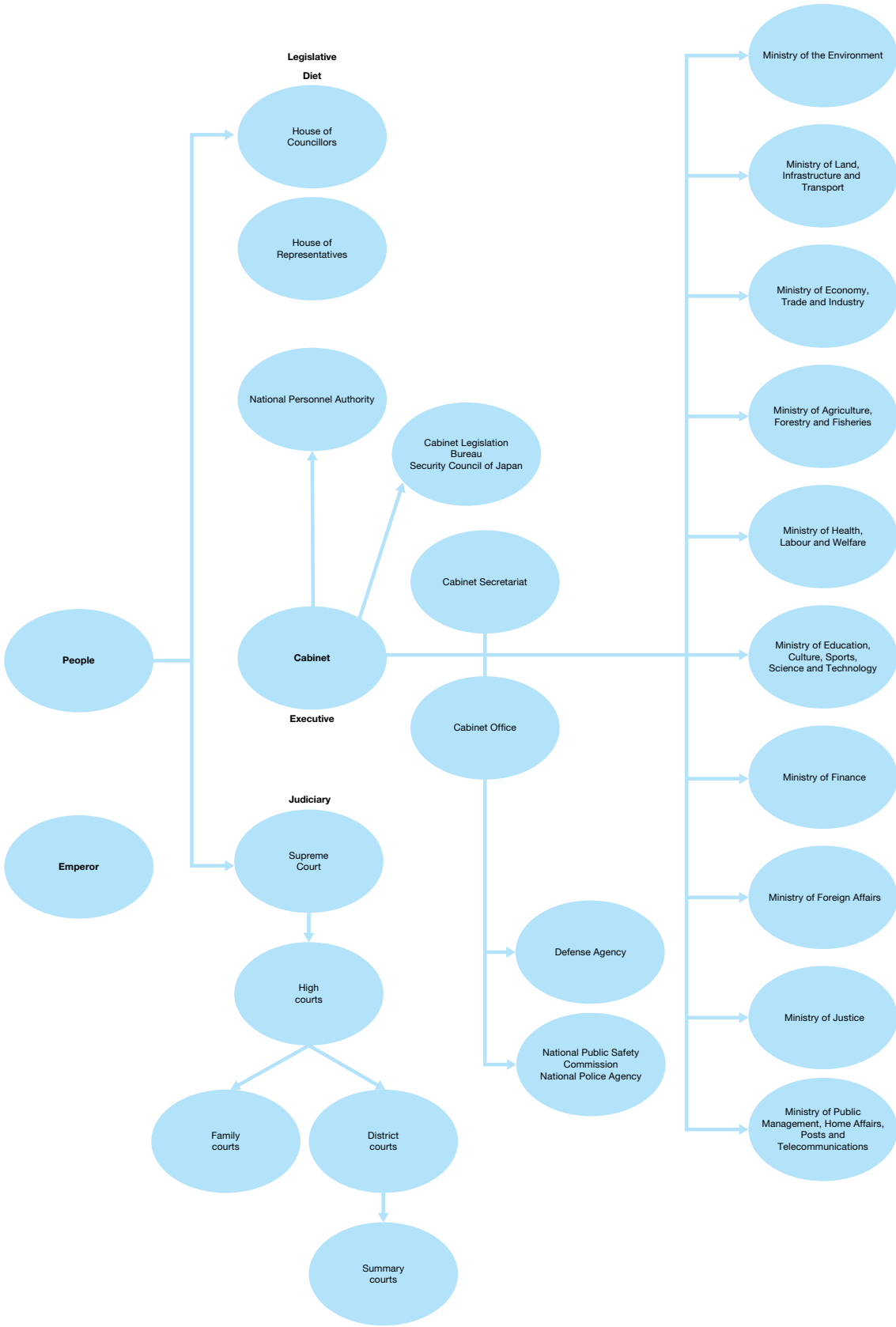
The House of Representatives is the more powerful of the two houses. Members serve a four-year term; however, political conditions in Japan mean that often the house dissolves before the end of the term. To be elected to the house, citizens must be at least 25 years old.

As of April 2016, seven political parties have representation in the House of Representatives. The Liberal Democratic Party has a two-thirds majority. There are also 14 independent members.

THE HOUSE OF COUNCILLORS (*SAGIIN*)

Representatives in the House of Councillors serve a six-year term; half of which expire every three years. The Prime Minister cannot dissolve the house. It does not have authority over legislation but it can delay the adoption of a budget or treaty.

Source 1.3.2 Japan's Prime Minister, Shinzo Abe, delivers a policy speech to the lower house of parliament.



Source 1.3.3 The structure of the Japanese Government

Passing bills

Bills are submitted to the Diet for approval. Once submitted, they are debated in both houses. Constitutionally, the House of Representatives has superiority over the House of Councillors. If a bill is passed in the lower house and is turned down in the upper house, it is automatically returned to the lower house where a two-thirds majority vote would result in it being passed.

The judiciary

The Supreme Court is the highest court in Japan. It sits above the High Court, district, family and summary courts.

All judges are independent in the Japanese judicial system. They are only bound by the Constitution and the law. Once appointed, they cannot be removed from the bench unless proven mentally or physically incapable of performing their duties. The executive cannot discipline them.

A Supreme Court judge may be removed in a referendum. These are held at the first general election of the House of Representatives following each judge's appointment. They are then reviewed every 10 years.

THE SUPREME COURT *(SAIKŌ SAIBANSHO)*

The Supreme Court is the final court of appeal in both civil and criminal cases and is responsible for interpreting the Constitution. It is responsible for nominating judges to lower courts, determining judicial procedures, overseeing the judicial system and disciplining judges. There are up to 15 judges on a Grand Bench or as few as five on a Petit Bench. The Grand Bench is used for constitutional cases.

The Emperor appoints the Chief Justice of the Supreme Court and the Cabinet appoints the rest.

The electoral system

The electoral system in Japan differs substantially from Australia as the voting system is mixed. Methods of direct election and proportional representation are used to determine the outcomes. Elections are supervised by election committees at each administrative level under the general direction of the Central Election Administration Committee.

Voting for the House of Representatives

The House of Representatives has up to 500 members who are elected for a four-year term. Three hundred come from single-seat constituencies. This means that in each district, each voter casts a vote and the candidate who receives the majority of votes becomes the sole representative of that district.

Around 200 seats are then decided by proportional representation. Under this system people vote for a party and not for an individual. A party will have individual candidates whom they rank. There are 11 regions or blocs in Japan. Each voter picks from a list of parties. The more votes the party receives, the more seats it will win. The number of seats that a party wins in the Diet is based on the percentage of the vote that it receives. For example, a district may have 20 seats available in the lower house. One party in that district may have 25 candidates standing for election. If the party receives 50 per cent of the vote they fill 10 seats on the Diet. To ensure that representation is equal among the blocs the numbers of available seats may change. Normally an election would see six to 30 members returned to the house.

Source 1.3.4 Prime Minister Shinzo Abe places a red rosette on the name of his Liberal Democratic Party's winning candidate during ballot counting in the 2012 general elections.

Voting for the House of Councillors

Elections for the House of Councillors take place every three years, despite the term lasting six years. Half of the 242 seats are filled at a time.

There are three types of voting formats:

- single-seat constituencies: a direct vote for a candidate
- multi-seat constituencies: a region is assigned a certain number of representatives, normally between three and five people. The winning candidates are those who rank in the top three or five of their region
- proportional representation: normally an additional 18 members.

To stand for representation in the House of Councillors citizens must be at least 30 years old.

Voting eligibility

Voting is open to Japanese citizens aged 18 and over. Voting in Japan is non-compulsory and voter turnout has varied significantly over the years. All elections are conducted through secret ballot.

Political campaigning

The rules for political campaigning in Japan are very strict. Candidates are only allowed a small amount of campaign material. The election campaign only lasts for 12 days, with government stipulations allowing very little media or commercial exposure. Paid advertisements are forbidden online; however, political parties can pay for ads linking to their websites.

Under the current political system, individual candidates do not rely upon their parties for electoral support. They try to build an organisation of people who will support them. This is known in Japan as *kōenkai* (personal support groups). It involves candidates doing favours for people in their local districts or communities such as helping someone to get a good job. Candidates try to recruit the support of local business leaders, religious groups or women's groups. It is hoped that these community members will, in turn, encourage their members to vote for the candidate.

Source 1.3.5 Japanese political parties created pamphlets and brochures using manga and mascots to promote their policies for the 10 July 2016 House of Councillors election, the first national election granting 18-year-olds the right to vote.

Source 1.3.6 Thousands of Japanese people in front of the Diet in Tokyo, protesting against the proposed security bills that threaten their pacifist standing, 30 August 2015.

A new self-defence bill

Recently, both houses have passed security legislation that allows the Japanese military to increase its role. It includes using the military to fight to protect allies even if Japan is not under direct threat. The Prime Minister pushed for the changes so that Japan could deal with a changed security environment in the face of a more powerful China and an unpredictable North Korea.

The proposed changes have sparked protest from the Japanese population as they are in direct violation of Article 9 of the Constitution.

ACTIVITIES

Remembering and understanding

1. Write down three facts, two thoughts and one question you have about Japan's system of government based on what you have learnt in the unit.
2. Which house has more power in Japan's government? Is this similar or different to Australia's government?
3. Why are elections for the House of Councillors held every three years?

Applying and analysing

4. Draw a diagram that demonstrates how members are elected to either the House of Representatives or the House of Councillors.

Evaluating and creating

5. Draw a T-chart that assesses the advantages and disadvantages of having a small and short electoral campaign, as they do in Japan. Write a paragraph either recommending or opposing this type of election campaign for Australia.
6. Create a print ad, with an image, aimed at attracting migrants to Japan based on their style of government.

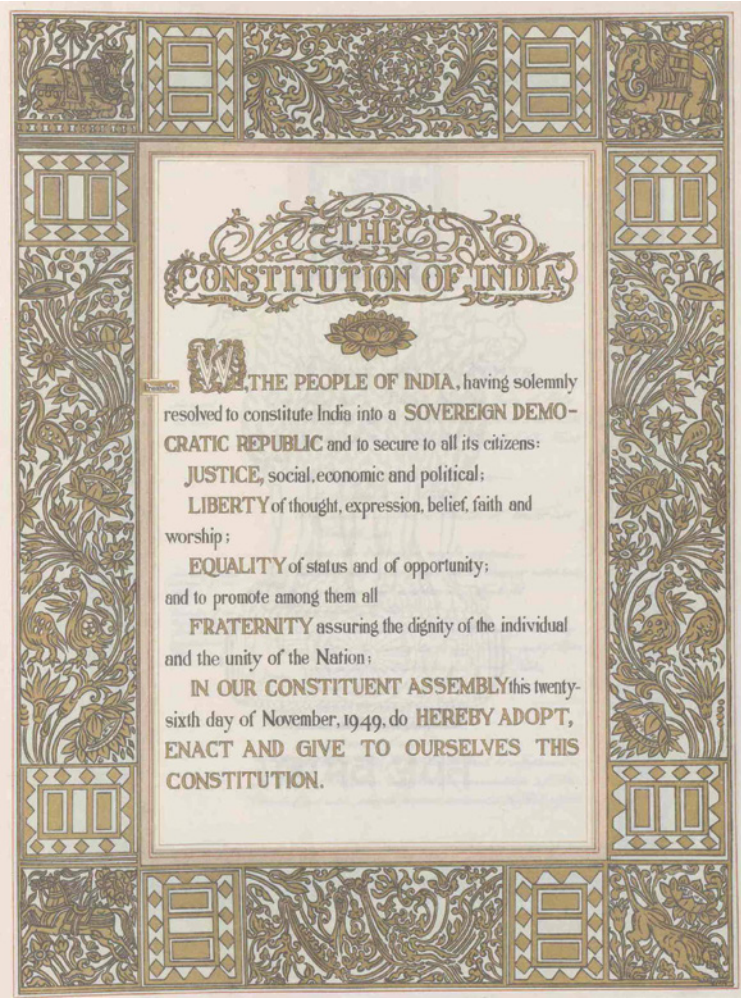
UNIT 1.4

India

India is one of the world's largest democracies with a population of over 1.3 billion people. The Indian Constitution defines it as a sovereign democratic, socialist and **secular** republic. It is a union of 28 states and seven territories.

The Indian Constitution

The Indian Constitution is the longest constitution in the world. It contains 444 articles, 12 schedules and 98 amendments, with almost 120 000 words in its English language version. Written during the fight for independence from Britain, it supports the ideals of liberty, equality and justice for all of its citizens. It came into effect on 26 January 1950.


THE CONSTITUTION OF INDIA

WE, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a SOVEREIGN DEMOCRATIC REPUBLIC and to secure to all its citizens:

JUSTICE, social, economic and political;

LIBERTY of thought, expression, belief, faith and worship;

EQUALITY of status and of opportunity;

and to promote among them all

FRATERNITY assuring the dignity of the individual and the unity of the Nation;

IN OUR CONSTITUENT ASSEMBLY this twenty-sixth day of November, 1949, do HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION.

Source 1.4.1 The original text of the preamble before the 42nd Amendment to the Constitution of India

Unlike other democracies that are very hesitant to change their constitutions, India has changed its constitution approximately 100 times. Constitutional change is enacted through the parliament.

Influences on the Indian Constitution

Several factors influenced the writing of the Indian Constitution:

- the aspirations that came out of the fight for independence from Britain
- the impact of British rule
- the ideas and example of Mahatma Gandhi
- other democracies from around the world.

A federal system

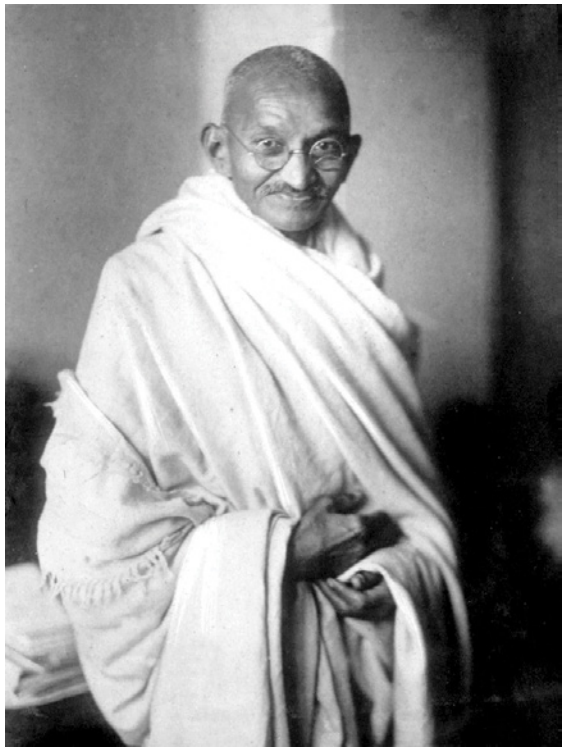
India is a federal system, meaning that the central or federal government is separate to the state governments. The federal government is referred to as the Union.

A federal system has the following features:

- two separate levels of government: national and state
- a written constitution
- division of power between federal and state governments
- a federal judiciary with the power to interpret the Constitution and the law.

CHARACTERISTICS OF INDIAN FEDERALISM

The Indian Union is a very strong national government, due to the circumstances of the formation of Indian democracy. After achieving independence, it was faced with the challenge of maintaining unity and creating a sense of stability. To achieve such goals, great political change was needed. The new leaders had the task of integrating the old British provinces and over 500 princely states into the new India. Significant social and economic problems also needed immediate attention. So the Constitution concentrated powers within the central government, rather than the states; it lists 97 areas where the Union has sole power. This is not a common characteristic of federalism.



Source 1.4.2 Mahatma Gandhi was a prolific campaigner against British rule of India. His pacifist methods of protest made him famous in India and around the world.

The Indian Parliament

Parliament is the most important organ in the Indian Government. It has responsibility in the following areas:

- legislative: the basic function of parliament is to make laws
- forming Cabinet: the Prime Minister selects the Cabinet on behalf of the parliament and the Cabinet performs the day-to-day administrative work of running the country
- controlling Cabinet: every day, parliament begins with an hour of question time. It is the most important part of the day. Ministers are **scrutinised** over proposed bills and policy initiatives on behalf of the Indian public. The Cabinet can only remain if they retain favour with the government
- finance: the Union parliament has complete financial control. Only the lower house in the Indian Parliament can introduce finance bills
- judicial: parliament can sack all judges and the President
- amending the Constitution
- electoral: they elect the President and Vice-President.

The parliament is meant to be the mirror of society.

Source 1.4.3 Parliament House in New Delhi, India, where the Constitution of India was drafted

Separation of powers

The Constitution provides a separation of powers between the executive, legislative and judicial branches of government.

The executive

The executive is comprised of the President, Vice-President, Prime Minister and Council of Ministers (equivalent to the Cabinet). It is completely responsible to the legislative branch. The Council of Ministers is subject to intense scrutiny from the *Lok Sabha* (the lower house). The Council of Ministers is also reliant upon the legislature to pass the budget. It is completely reliant upon the support from the lower house for the success of its term in office.

THE PRESIDENT

The President is the head of state. This is primarily a ceremonial role, modelled on the British monarch to 'advise, encourage and warn.' The role serves as a symbol of unity among the Indian people. An electoral college of about 4500 members elects the President for a five-year term. The President is eligible for re-election. The Prime Minister advises the President. The President is not a member of either house of parliament. According to the Constitution, the President represents the nation but does not rule it.

In times of crisis the President can extend the life of the *Lok Sabha* by a year.

THE PRIME MINISTER

The Prime Minister is the official head of government, selected by the lower house. The President makes the official appointment. The role of Prime Minister is

Source 1.4.4 Indian President Pranab Mukherjee and Prime Minister Narendra Modi pose with new Cabinet ministers in November 2014.

the most powerful in the Indian Government. The role includes:

- formulating the Council of Ministers. This body is responsible for the policy and legislation of India. The Prime Minister allocates portfolios to ministers
- presiding over Cabinet meetings
- serving as the only link between the President and the ministers
- sacking ministers
- advising the President
- deciding on all matters of foreign policy.

When the Prime Minster resigns, the entire Cabinet is dissolved.

The legislature

The legislature is the most powerful organ in India. It is responsible for all policy direction and legislation.

India is a bicameral parliament, with the following houses:

- *Lok Sabha*, 'the House of the People' (the lower house)
- *Rajya Sabha*, 'the Council of States' (the upper house)

At the state level, citizens are represented in legislative assemblies or *Vidhan Sabha*. India is broken up into 28 states and seven territories. Most states are unicameral, but seven are bicameral.

THE HOUSE OF THE PEOPLE (*LOK SABHA*)

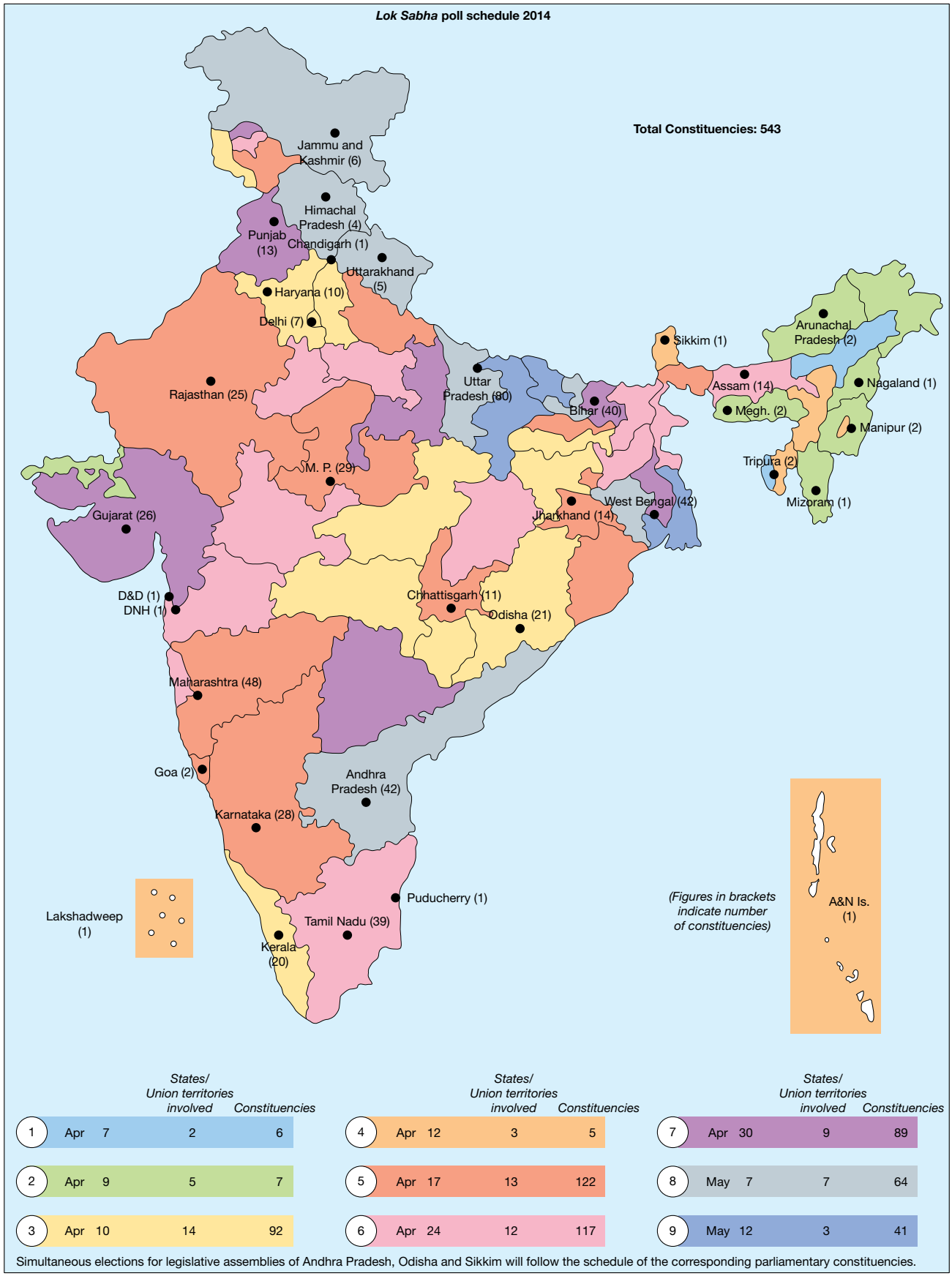
Lok Sabha, lower house of the Indian Parliament, represents the people. There is a maximum of 552 members who serve a five-year term.

To be elected to the *Lok Sabha,* citizens must be at least 25 years old and a registered voter. Candidates are elected by a direct vote. India is divided into electorates of roughly the same size. Each electorate has one representative. The candidate who receives majority of the vote wins.

THE COUNCIL OF STATES (*RAJYA SABHA*)

The *Rajya Sabha*, upper house of the Indian Parliament and represents the states. It has 250 members who serve a six-year term. Every two years, one-third of the members retire.

The President nominates 12 members of the chamber. They are selected because they have skills and expertise in areas that are useful in the analysis of proposed legislation. They are knowledgeable in the arts, science and literature.



Source 1.4.5 A map showing the polling schedule for the 2014 Indian general election

The remaining 238 members are indirectly elected by state assemblies and union territories. Representation is not equal in the upper house. Every state has representation depending on its population; the greater the population, the greater the number of seats allocated.

Voters order their choice of candidates from most preferred to least preferred candidate. To win the election candidates must win a certain percentage of the vote.

Indian citizens wishing to stand for election must be at least 30 years old and a registered voter.

Did you know?

The Indian Constitution recognises 22 languages. Fifteen languages are spoken in the Indian Parliament. They are interpreted into both Hindi and English.

The judiciary

India has a single integrated judicial system. The Supreme Court is the highest court in India with the High Courts operating at the state level. Below the High Courts are sessions and district courts. There are 21 High Courts for 28 states.

THE SUPREME COURT

The Supreme Court can override decisions made by a High Court. It deals with matters of conflict arising between the Federal Union and the states, or conflicts between two or more states. The Supreme Court also deals with matters of constitutional interpretation and the constitutional rights of citizens.

Judges from the Supreme Court are selected from the High Court and appointed by the President on the advice of the Prime Minister. They are able to work until the age of 65.

Source 1.4.6 Voters in Kashmir queuing to vote in the 2014 elections; the military presence is due to a history of violence during elections in the region, which is also claimed by Pakistan.

Electoral system

The Electoral Commission of India is a constitutionally recognised, autonomous authority, responsible for running free and fair elections.

The sheer size of the Indian population makes elections very difficult. In the general election of 2014, there were 814 million people eligible to vote. Under the Indian Constitution people should not have to travel more than 2 kilometres to get to a polling station, so 930 000 polling booths were required.

Voting took place over six weeks and the votes were all counted in one day. It took almost four million staff to run the election. Voter turnout for the 2014 election was higher than normal at 66 per cent. The average turnout is 55 per cent.

Due to the high proportion of illiteracy in India many parties use symbols in order to increase their appeal and convey their overall message to voters.

Political parties

India has a multiparty system, but historically elections have been dominated by the Indian National Congress (INC). The INC held power from 1947–89, 1991–96 and again from 2004–14. After increased growth in their support base, the Bharatiya Janata Party (BJP) won the 2014 national general election with a clear majority and the party's Narendra Modi was sworn in as Prime Minister. The BJP presented itself as a party that embodies the socio-religious and cultural values of the Hindu majority. BJP also supports a strong national defence and conservative social policies.

ACTIVITIES

Remembering and understanding

1 What is the most important organ of the Indian government?
2 Compare and contrast the roles of Prime Minister and President in India.
3 Describe some of the difficulties of holding an election with such a large population.

Applying and analysing

4 List some of the problems that may be associated with having a very long constitution like India does.
5 Conduct further research on Mahatma Gandhi and write a report that explains the impact he had on India's system of government.

Evaluating and creating

6 Imagine you are an electoral worker for the Electoral Commission of India. Write a letter or postcard to a friend in Australia, describing what an election in India is like.
7 Create a list of recommendations for the Electoral Commission of India advising them how to further assist illiterate voters during election time.

UNIT 1.5

Indonesia

Indonesia is a democratic republic comprised of 17 508 islands, founded upon the fundamental principle of *Pancasila*. *Pancasila* informs the Constitution and helps to unify the vast cultural, religious and social differences of the Indonesian population.

Indonesia's written Constitution

Indonesia has a written constitution that guides its representative democracy. The Constitution was ratified on 17 August 1945, when Indonesia officially declared independence from the Netherlands. It is now referred to as the 1945 Constitution. It outlines the ideals of *gotong royong* (mutual assistance), *musyawarah* (deliberation of representatives) and *mufakat* (consensus); these principles have helped to underpin the day-to-day running of Indonesia.

According to the Constitution, the highest representative body at a national level is the People's Consultative Assembly (*Majelis Permusyawaratan Rakyat*, or MPR). It has the power to impeach the President.

Source 1.5.1 Indonesian President Joko Widodo (right) and the newly appointed ministers (left) during the swearing-in ceremony of Cabinet members in 2014

The Constitution outlines the separation of powers between executive, judiciary and legislature. It also includes provisions concerning the powers of regional legislation, human rights and changing the Constitution.

Changing the Constitution

In order to change the Indonesian Constitution the proposed amendment must be supported by one-third of the MPR. While the amendment is being discussed two-thirds of the parliament must attend the session. The MPR must have an absolute majority for the proposed amendment to be passed.

The President

The Constitution vests all power in the President. The president is the head of state, the head of government and the supreme commander of the armed forces. In addition, the President is responsible for matters of domestic governance, policy-making and foreign affairs. He or she has a central role in the law-making process. Directly elected by the people, the President may be drawn from any of the official parties running for political office. The term of office is five years, with a maximum of two terms of service permitted.

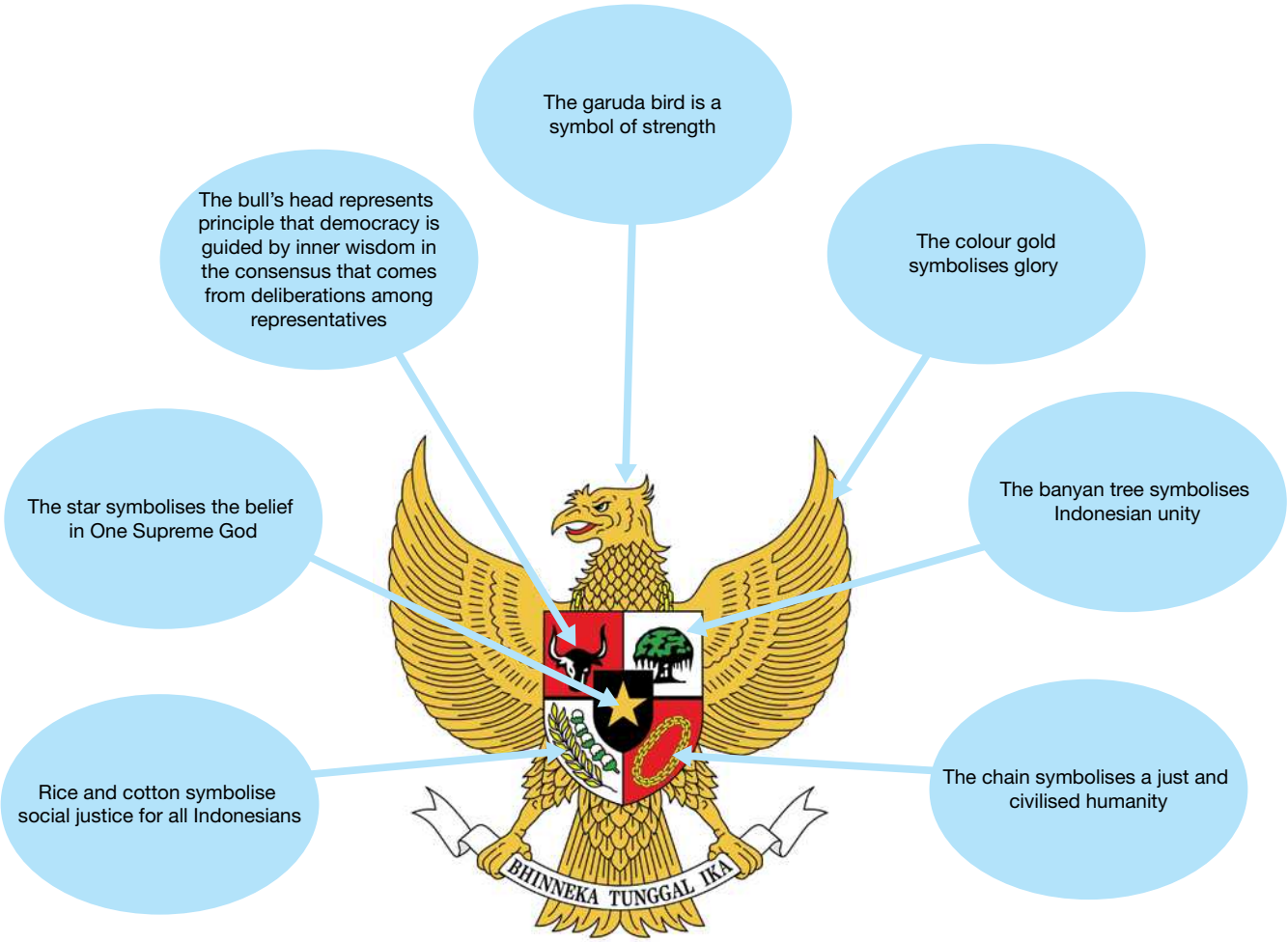
The President presides over the Cabinet and appoints its ministers. Cabinet ministers are not from the MPR as they are not permitted to hold executive office. The President is not permitted to dismiss the MPR.

Pancasila

Part of the Constitution includes the principle of *Pancasila*. *Pancasila* outlines the role and composition of the MPR and the executive. The President and the MPR must abide by it. *Pancasila* is based on the following precepts:

- belief in the one and only God (*Ketuhanan Yang Maha Esa*)
- a just and civilised humanity (*Kemanusiaan Yang Adil dan Beradab*)
- the unity of Indonesia (*Persatuan Indonesia*)
- democracy guided by the inner wisdom in the unanimity arising out of deliberations among representatives (*Kerakyatan Yang Dipimpin oleh Hikmat Kebijaksanaan, Dalam Permusyawaratan dan Perwakilan*)
- social justice for all the people of Indonesia (*Keadilan Sosial bagi seluruh Rakyat Indonesia*).

Indonesia's national emblem embodies the principles of *Pancasila*. Source 1.5.2 demonstrates the connections.



Source 1.5.2 The meaning of the *Garuda Pancasila* emblem. The shield represents defence of the Indonesian nation, while the colours on the shield are the same as the Indonesian flag.

The structure of the Indonesian political system

Source 1.5.3 The structure of the Indonesian system of government

Separation of powers

The Indonesian Constitution provides complete separation of the executive, legislature and judiciary (see Source 1.5.3).

The executive

The executive in Indonesia is comprised of the President, Vice-President and Cabinet. The Cabinet is made up of high-ranking ministers who are each responsible for a specific area of government. Some of the areas that are included in the executive are religious affairs, finance, justice and human rights. The national police chief and the head of the intelligence agency are members of the executive. The ministers are responsible to the President for their decision-making.

The legislature

Legislative power in Indonesia resides with the People's Consultative Assembly (MPR). It is comprised of two houses:

- the House of Representatives (*Dewan Perwakilan Rakyat*, DPR) composed of representatives of political parties. There are 560 members whose role is to reject, amend or pass a bill. They also monitor the executive branch
- the Regional Representatives Council (*Dewan Perwakilan Daerah*, DPD) made up of representatives from each province in Indonesia. There are 132 members (four to represent each of the 33 provinces). It does not have a role in the law-making process at a national level. It was created to increase regional representation. Because the DPD does not have an official law-making role, the parliament is not strictly bicameral.

In Indonesia the legislature has the responsibility of making laws and under the Constitution the President and the DPR fulfil this role. The DPD are, however, able to propose, debate and make recommendations on bills relating to regional issues.

In Indonesia most bills are passed by consensus. This means that bills are passed by all members either agreeing to support a bill or oppose it. Voting rarely takes place. The precept of *musyawarah mufakat* (consent through the deliberation of representatives) is highly valued and is the basis of law-making. By the time a bill is ready to be presented to members of parliament it has been rigorously scrutinised by a select commission.

Source 1.5.4 Inside the Indonesian House of Representatives, Jakarta

THE PROCESS OF PASSING A LAW

The Constitution states that laws are made by 'joint agreement' between the President and the DPR. Most of the bills are introduced by the executive; they are government bills. On occasion they originate from a member of the DPR (with the support of at least 10 other members of the chamber).

Once a bill has been introduced it is passed to the DPR Commission for analysis which is conducted away from the public eye. Bills can be amended to reach agreement and can only be presented to the DPR when a full agreement is reached. Once read, the Commission normally passes the motion.

ENACTING A BILL

When a bill has been agreed upon, the President signs it into law. If agreement cannot be reached between the President and the DPR, the bill cannot be reintroduced during the term of the DPR.

The judiciary

The highest judicial branch in Indonesia is the Supreme Court (*Mahkamah Agung*). The President appoints the judges of the Supreme Court.

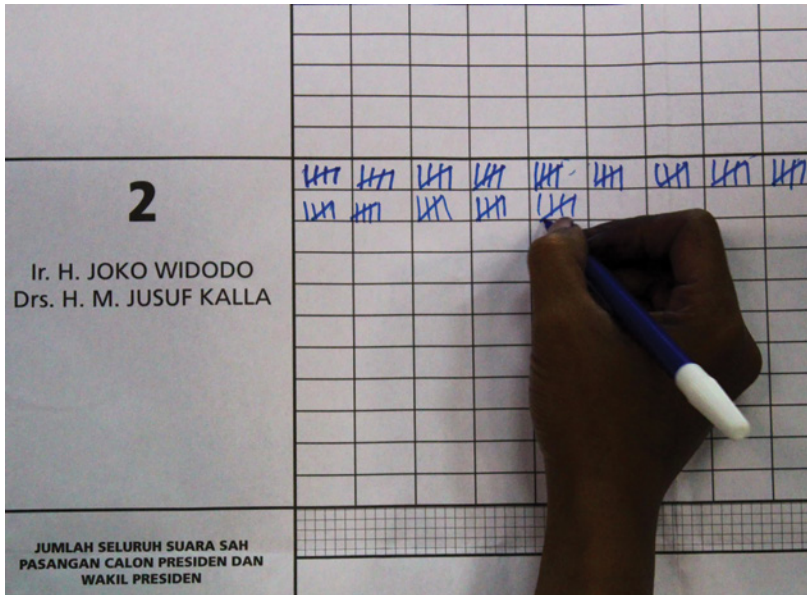
Indonesia has specific courts for specific cases. Normally cases are heard in state courts, of which there are about 250 throughout Indonesia. Appeals can be taken to the High Court, of which there are 20. From here, cases can be taken to the Supreme Court in Jakarta.

Indonesian courts do not use the principle of precedent cases; this is similar to the Dutch legal system, as Indonesia was previously a Dutch colony.

Elections

Elections are held in Indonesia every five years. As in the Australian House of Representatives, each electorate has one seat in parliament that is contested during elections. In Indonesia each electorate returns between three and 12 members to the DPR. Each time, the number varies according to the population.

There are four representatives elected to the DPD for each province.



Source 1.5.5 Indonesian electoral officials count ballots at a polling station during the Indonesian presidential elections, 9 July 2014.

Organisation of elections

The elections are organised by the General Electoral Commission (KPU). Elections must be free and open, with the KPU determining which parties may run for office. This is because Indonesia has had problems with smaller coalition parties. Once their common goal of seeking election is won they can create instability within the chamber. Therefore contesting parties for an election have to be large enough that they have branches all over Indonesia.

Furthermore, each party in the MPR must have at least 30 per cent female candidates.

Voting

Voting in Indonesia is not compulsory. Indonesian citizens need to register to vote and can vote from the age of 17. If a citizen marries prior to turning 17, they are entitled to vote. The system of proportional representation is used to determine the outcome.

It is estimated that in a population of approximately 237.56 million, the number of eligible voters is 187 977 268. The KPU has set up around 550 000 polling stations to enable people to vote. Voter turnout was 93 per cent in 1999, 84 per cent in 2004, 71 per cent in 2009 and 75 per cent in 2014.

Presidential and vice-presidential candidates must be nominated by a party or a coalition of parties. The two run as a pair. The parties that nominate the candidates must have won 25 per cent of the overall vote or have

Source 1.5.6 Voters in Indonesia; temporary indelible ink is used when Indonesians vote, so they cannot vote more than once.

won at least 20 per cent of the seats in the DPR. To be successful they need 50 per cent of the overall vote and they also have to achieve more than 20 per cent of the votes in over half of the provinces.

In the event of this not being achieved the top two candidates contest a second election.

Criteria to stand for election

In order to stand for election in Indonesia candidates must fulfil the following criteria:

- be an Indonesian citizen by birth
- believe in one God
- pay taxes
- be faithful to *Pancasila* and the 1945 Constitution
- be over the age of 35.

The party system

Indonesia has a multiparty system. Australia also has a multiparty system, but is dominated by two major parties. The Indonesian political parties all vary in their policies and objectives and are often divided along religious and cultural lines.

ACTIVITIES

Remembering and understanding

1. Explain what 'deliberations amongst representatives' means, as appears in Indonesia's constitution.
2. Find evidence to support the fact that Indonesia is a deeply religious nation.
3. State which house is the more powerful one in the People's Consultative Assembly.
4. How does Indonesia strive for some sort of gender equality in the People's Consultative Assembly?

Applying and analysing

5. Create a comic strip that demonstrates how a bill becomes a law in Indonesia.
6. Use the think, pair, share approach to list and discuss some possible causes for a drop in voting numbers in Indonesia over the last 15 years.

Evaluating and creating

7. Indonesia's president is looking for someone to redesign its emblem as it has not changed in over 50 years. Create a new emblem for Indonesia that embodies their ideas and values, as outlined in their constitution.

UNIT 1.6

Comparing key features

Differing styles of government

Despite all professing a democratic style of government, Australia, China, Japan, India and Indonesia all practise it in very different ways.

Constitutions

A written constitution is considered to be one of the most important features of a modern democracy. Despite their common purpose of setting out the processes and procedures and the arms of government of a nation state, the constitutions of Australia, China, Japan, India and Indonesia are all very different.

IMPORTANCE OF HISTORICAL CONTEXT

To understand a constitution and its basic provisions, it is important to understand the historical context that led to its creation. Australia's Constitution, enacted in 1901, reflects the peaceful transition to a federation and the influence of both the Westminster (British) and Washington (American) systems. Australia combined these to create a 'Washminster' system, in the same style as Canada.

The constitutions of India and Indonesia are the result of periods of instability and turmoil. These nations emerged from civil war and the fight for independence. India's national government was designed to have significant powers, with its constitution listing 97 areas where it exercises sole power.

The Japanese Constitution was written in the wake of World War II, with pressure from the Allied nations to ensure that Japan would never be able to provoke war again. The inclusion of Article 9—the 'no-war' clause—was a strong political statement to indicate Japan's willingness to rebuild a nation committed to peace.

ATTITUDES TO CONSTITUTIONAL AMENDMENT

Japan and Australia demonstrate the most conservative attitudes towards constitutional amendment. This is reflected in the difficulty in enacting changes and also the limited number of times alteration has occurred. This differs to India where the amendment process is simpler and amendments occur more frequently.

Value of separation of power

The separation of powers—the executive, legislature and judiciary—is a key feature of a democracy. It avoids the exercise of arbitrary power and prevents politicians and those in positions of authority from becoming corrupt. Australia, Japan, India and Indonesia all include provisions for the separation of powers, but these provisions vary to some degree in practice. China, however, does not adhere to such a principle. The Communist Party has committees in operation throughout all levels of government preventing independent activity by these bodies.

THE ROLE OF THE EXECUTIVE

Australia and Japan are constitutional monarchies with unelected heads of state. The power of the Queen and the Emperor are symbolic only, with real power vested in parliament and the legislature. The Republic of India has the President serving a largely symbolic role, whereas in Indonesia the President has a much more powerful role.

IMPORTANT ROLE OF PARLIAMENT AND THE LEGISLATURE

Parliament and the legislature are the supreme organs for formulating laws and policies, in all the nations studied except China. Parliament is valued because it is considered to be the representation of the people's will. India calls it 'the mirror of the people'. There is often a slight overlap between the executive and the legislative branches. This occurs in Indonesia as the President and DPR negotiate laws.

Electoral systems

The population and diversity of the nation influence the electoral system. Many democracies have at least two, if not three, tiers of government which all require elections (local, state and national). Each democracy has an electoral commission to ensure elections are fairly and legally conducted (see Source 1.6.1). Often populations are divided into electorates to ensure an equal and fair distribution of votes.

Voting methods

A combination of majoritarian and preferential voting is often used to determine the outcome of elections. Majoritarian voting involves one vote for a preferred candidate who must win a majority of votes to be elected to a seat. Preferential voting involves voting for candidates in order of preference. Proportional voting occurs in multi-seat constituencies, where several parties may win seats based on the proportion of votes they receive. It is believed that preferential and proportional methods of voting provide a more accurate picture of who the preferred candidates are.

Political parties

A multiparty system is necessary to ensure that democracies are representative of the people. Apart from China, which has only one political party, other democracies ensure that there is a multiparty system. Indonesia has very strict regulations about the parties that can stand for election due to its dislike of small coalitions wielding too much power. Australia only has two dominant political parties that contest elections. Indonesia and Japan have a broader representation of parties, with India slowly catching up.

Democratic features	Australia	Japan	Indonesia	India	China
Type of democracy	Constitutional monarchy	Constitutional monarchy	Republic	Republic	Republic
President/ Prime Minister	Prime Minister	Both	President	Both	President
Bicameral legislature	Yes	Yes	No	Yes	No
Federal government	Yes	Yes	No	Yes	No
Written constitution	Yes 1 January 1901	Yes 3 May 1947	Yes 17 August 1945	Yes 26 January 1950	Yes 4 December 1982
Separation of powers	Yes	Yes	Yes	Yes	No
Type of party system	2 dominant political parties	Multiparty system	Multiparty system	Multiparty system	One-party system
Voting	Compulsory	Non-compulsory	Non-compulsory	Non-compulsory	Non-compulsory
Respect for rule of law	Yes	Yes	Yes	Yes	No
Independent judiciary	Yes	Yes	Yes	Yes	No
Free elections	Yes	Yes	Yes	Yes	Yes
Number of eligible voters	16 405 465	103 962 785	187 977 268	834 101 479	18 782 991
(actual vote)	(15 338 686)	(54 735 787)	(139 573 927)	(553 801 801)	(12 448 302)
Voter turnout	93.23%	52.66%	75.11%	66.4%	66.95%
Minimum voting age	18	20	17 (earlier if married)	18	18

Source 1.6.1 A comparison of some of the major democratic systems of government in the Asia–Pacific region

ACTIVITIES

Remembering and understanding

1 List all the features of China's structure of government that do not adhere to the traditional ideas and values of democracy.

Applying and analysing

2 Conduct further research and then prepare a flow chart that demonstrates the steps required to change the constitution in either Australia, China, Japan, India or Indonesia.

3 Use a mind map to explore the ways that war and a fight for independence can impact on a nation's ideals, values and the writing of their constitution.

Evaluating and creating

4 Create a constitution for your classroom or school. Think about the values and ideals that are important to the school community. Also consider the 'separation of powers' between staff and students.

6 Write an opinion piece for a newspaper about whether Australian students understand enough about the importance of democracy.

Inquiry tasks

Comparing different systems

Compare the systems of government that are used in Australia, China, Japan, India and Indonesia. Analyse the information provided in this chapter to help you complete this task. Focus on similarities in government structures, processes or democratic ideals that are shared by two or more nations. List your findings under the following headings:

- separation of powers
- structure of parliament
- executive power
- court system
- constitutional change.

Make sure that you remember to identify the relevant nations involved in each comparison that you make.

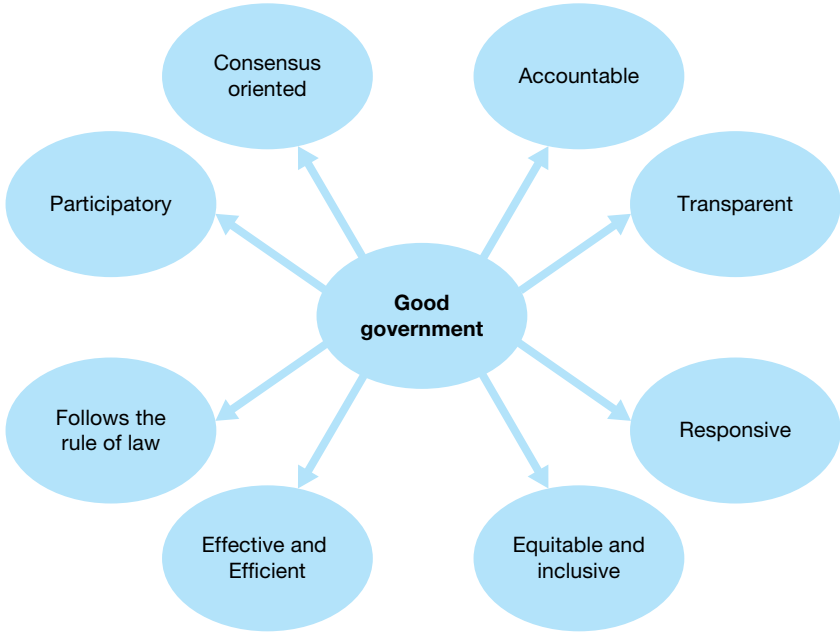
Unique differences

Distinguish between the features and values of Australia's system of government and one other system of government in the Asian region. You might like to select from the case studies presented in this chapter on China, Japan, India and Indonesia.

No two government systems are exactly alike, but can you identify what it is that makes these two systems distinctly different from one another? Describe the unique differences in a series of paragraphs. Undertake some additional research on the internet or in your school library to locate recent examples of these features or values in action within each system studied.

Think, pair, share

Prepare for a think, pair, share activity by judging, on your own, the democratic nature (or otherwise) of each system of government that you have studied in this chapter. Rank the five case study nations from 'most democratic' to 'least democratic' and consider the evidence that you might provide to support your decisions. Once your list is complete, share your work with another student. As a pair, compare your rankings and be prepared to justify your choices to one another. Next, broaden the discussion by sharing your ideas with another pair of students. At the end of this process, consider whether any member of your group is willing to change their ranking based on the arguments put forward during the discussions.



Source 1.7.1 Good government is dependent on the existence of a range of democratic characteristics.

Design your own government

Imagine that a new sovereign state has just been created somewhere on earth. Its citizens have expressed a desire to join together to create the 'most democratic country in the world'. Design a new system of government that will help to fulfil the grand vision of this fledgling nation and its people. Think carefully about how this system will be constructed and what makes 'good government'. Some ideas are provided in Source 1.7.1 opposite. Pay particular attention to how your system of government will ensure key democratic ideals such as the:

- separation of powers
- rule of law
- rights of citizens
- political and legal rights.

Produce a large diagram that sets out your ideas about the legislative, executive and judicial features of the system. Annotate your diagram with information about the democratic processes and procedures that will operate within the system, with respect to issues such as constitutional change, elections and voting, and the rights of citizens.

GLOSSARY

amendment alteration or change for example, to a constitution

bicameral a government with two houses of parliament

constitution a written set of principles and laws that describes a government's powers and duties

constitutional monarchy a system of government in which the head of state is a monarch whose power is limited by a constitution

doctrine a set of principles or beliefs

ideology the system of beliefs, ideas and symbols of a large group or movement

legislation laws passed by a government; enacting a bill into a law

motion formal proposal for an action or decision

municipality an area of administration with a local government that reports to the Chinese Government, with a slightly higher level of autonomy than a province (China); a local area of administration (Japan)

nominate propose (a person) for a duty or office

presumption of innocence presumption that a person is not guilty until the charge has been proved beyond reasonable doubt; the imposed burden on the prosecution of proving the charge

propaganda the intentional dissemination or spreading of a doctrine

province an area of administration with a local government that reports to the Chinese Government

ratify adopt or approve, for example legislation

recruit enlist new members

referendum a vote of the electorate on measures proposed or passed by a legislative body for approval or rejection; in Australia, a vote by Australian electors on a proposed change to the Constitution by the Commonwealth Parliament that must be approved by a majority

scrutinised monitored or reviewed critically

secular of or relating to the world rather than religion

socialist believing the means of production should be owned by the people as a whole, rather than individual ownership

unicameral government with one house of parliament


AME
TEAM
AVSEC

CHAPTER

2

Australia and overseas

Australia has an important role to play in the global community. Political stability and economic prosperity ensure that Australia is in the fortunate position of being able to help the developing world lift itself out of poverty. Australia provides foreign aid primarily to its neighbours, Papua New Guinea and Indonesia, but has been a successful partner in UN Peacekeeping missions throughout the world for over 60 years. Australia has **ratified** important international treaties that support ongoing protection of human rights; however, there is mounting pressure on the Australian Government to apply the terms of those treaties more accurately in Australia, particularly with regard to **asylum seekers** and Indigenous Australians.

Source 2.0.1 The Australian Defence Force supported the Australia's Whole of Government response to help Vanuatu, after the devastating Cyclone Pam, in 2015.

UNIT 2.1

Australia's roles and responsibilities at a global level

Australia as a global citizen

War, poverty and human rights abuses cannot be solved by one country alone; global cooperation is necessary. As a politically and economically stable country, Australia assists with global peacekeeping and aid. A country can play a role as a '**global citizen**' when it looks outside its own borders to help less fortunate countries, and work towards a greater good. Helping others is considered to be a moral obligation, and in some circumstances it is a legal obligation.

Australia and the United Nations

The United Nations was formed on 24 October 1945, to take action on issues of humanity and to maintain global peace and security. Due to its size (193 member states) it is the largest and most effective international agency that Australia belongs to. In 2016, Australia was the 12th largest contributor to the UN budget.

Australia's areas of involvement in the UN

Through its membership of the UN, Australia pursues its international interests and fulfils its responsibilities as a global citizen. It collaborates on:

- human rights: Australia was one of eight countries that drafted the Universal Declaration of Human Rights, 1948
- health: with a focus on the Asia–Pacific region, Australia contributes to a global fund to fight HIV/AIDS, tuberculosis and malaria; and is helping to increase the rate of vaccination
- humanitarian issues: Australia responds to humanitarian crises, global disease threats, and helps people displaced by global conflict
- migration: Australia promotes the safe, lawful and orderly movement of **refugees** and asylum seekers
- the environment: Australia is committed to finding a global solution to climate change, and

Source 2.1.1 Australian Foreign Affairs Minister Julie Bishop delivering a national statement during the United Nations Climate Change Conference in Paris, France, 7 December 2015

Source 2.1.2 A UNICEF child protection specialist, addresses children during a ceremony formalising their release from the South Sudan Democratic Army (SSDA) Cobra Faction armed group, in the remote village of Lekuangole, in Jonglei State, 21 March 2015.

to sustainable development, with a special interest in oceans and mining. Other areas of focus include Indigenous land and sea management, food security and disaster risk reduction.

Australia and the United Nations Security Council

The United Nations Security Council (UNSC) is one of five principal organs of the UN. It is responsible for international peace and security, accepting new members and making any changes to the UN Charter. It has five permanent and 15 temporary members. From 2013 to 2014, Australia had a seat on the UNSC for the fifth time. During this time, Australia increased its international standing by taking a lead role in the following areas:

- Australia immediately condemned the shooting down of Malaysian Airlines Flight MH17 on 17 July 2014, and demanded a thorough investigation
- with Luxembourg and Jordan, Australia called for **resolutions** recognising the impact of the Syrian War on civilians, especially women and children, including better access to and protection of those directly impacted by the war
- Australia highlighted human rights abuses in the Democratic People's Republic of Korea to the UN for the first time
- Australia was able to author and lead negotiations on Resolution 2117 restricting the international flow of small arms and weapons, the first of its kind
- Australia highlighted the important role women play in conflict prevention, peace negotiations and **peacebuilding**
- Australia's contributions as a Security Council member allowed the Indo–Pacific perspective to be conveyed to an international audience.

UNSC WORKING GROUP ON CHILDREN AND ARMED CONFLICT (2013–14)

As part of its work on the UNSC, Australia contributed to the issue of children affected by global conflict. It is estimated that over one billion children are impacted by war; 300 million of whom are under the age of five.

The UNSC Working Group on Children and Armed Conflict focuses on several things:

- making children's rights abusers more accountable for their actions
- ending child recruitment for armed combat and intelligence
- protecting children from harm and exploitation during armed conflict; children are often used for sex and forced labour, and fall victim to landmines.

Australia is currently a partner with the United Nations International Children's Emergency Fund (UNICEF), working to reintegrate into society former child soldiers in Myanmar, the Philippines and South Sudan. Despite all attempts to wipe out child recruitment (the goal was the end of 2016), children continue to suffer as a result of conflict and war (see Source 2.1.2).

Source 2.1.3 On the UN mission UNTAET to Timor-Leste, an Australian soldier talks with a local girl. The mission provided civil administration and peacekeeping while Timor-Leste established independence, after it broke away from Indonesia.

Maintaining global peace and security

In the last 60 years over 65 000 Australian military personnel have assisted with peacekeeping and security throughout the world. Peacekeeping missions are designed to support the implementation of a **ceasefire** or peace agreement. Since 1947, Australia has participated in over 50 UN operations (see Source 2.1.3). This includes continuous participation in the Middle East and Cyprus, and deployments to Afghanistan and South Sudan.

In the Asia–Pacific region, Australia has led peacekeeping missions to the Solomon Islands (2000–13), Timor-Leste (1999–present) and Papua New Guinea (1994 and 1997–2003), and was instrumental in the Cambodian Peace Settlement (1991). Australia also contributed to Commonwealth missions in Zimbabwe (1979–80) and Uganda (1982–84).

Australia has been a reliable contributor to global peacekeeping. Australia's role is further demonstrated in its commitment to Responsibility to Protect (R2P). This is an expression of collective commitment by all UN member states to prevent genocide and other war crimes from reoccurring.

Peacekeeping to peacebuilding

States need to constantly reassess their approach to maintaining peace and stability. Recently, the focus has changed from peacekeeping to peacebuilding. Peacebuilding means implementing long-term strategies that prevent nations from falling back into conflict. Australia has helped promote human rights, provided increased security, strengthened the rule of law and promoted sustainable economic development.

Provision of foreign aid

Foreign aid refers to giving money and material support to other countries, and is an essential component of Australia's global responsibilities. The UN Millennium Project, developed in 2002, set a target that would see developing countries give 0.7 per cent of their **gross national product** in foreign aid. In the 2016, the Australian Government allocated 0.23 per cent of the Federal Budget to foreign aid.

The primary goal is to generate economic growth in the developing world and to bring it out of poverty. Currently, there are approximately 800 million disadvantaged people in the Indo–Pacific region. Most of Australia's foreign aid goes to Papua New Guinea (PNG) and Indonesia.

There are positive effects for Australia, too. By providing aid, particularly to its neighbours, Australia is able to develop good relations, maintain regional security and model good **governance**.

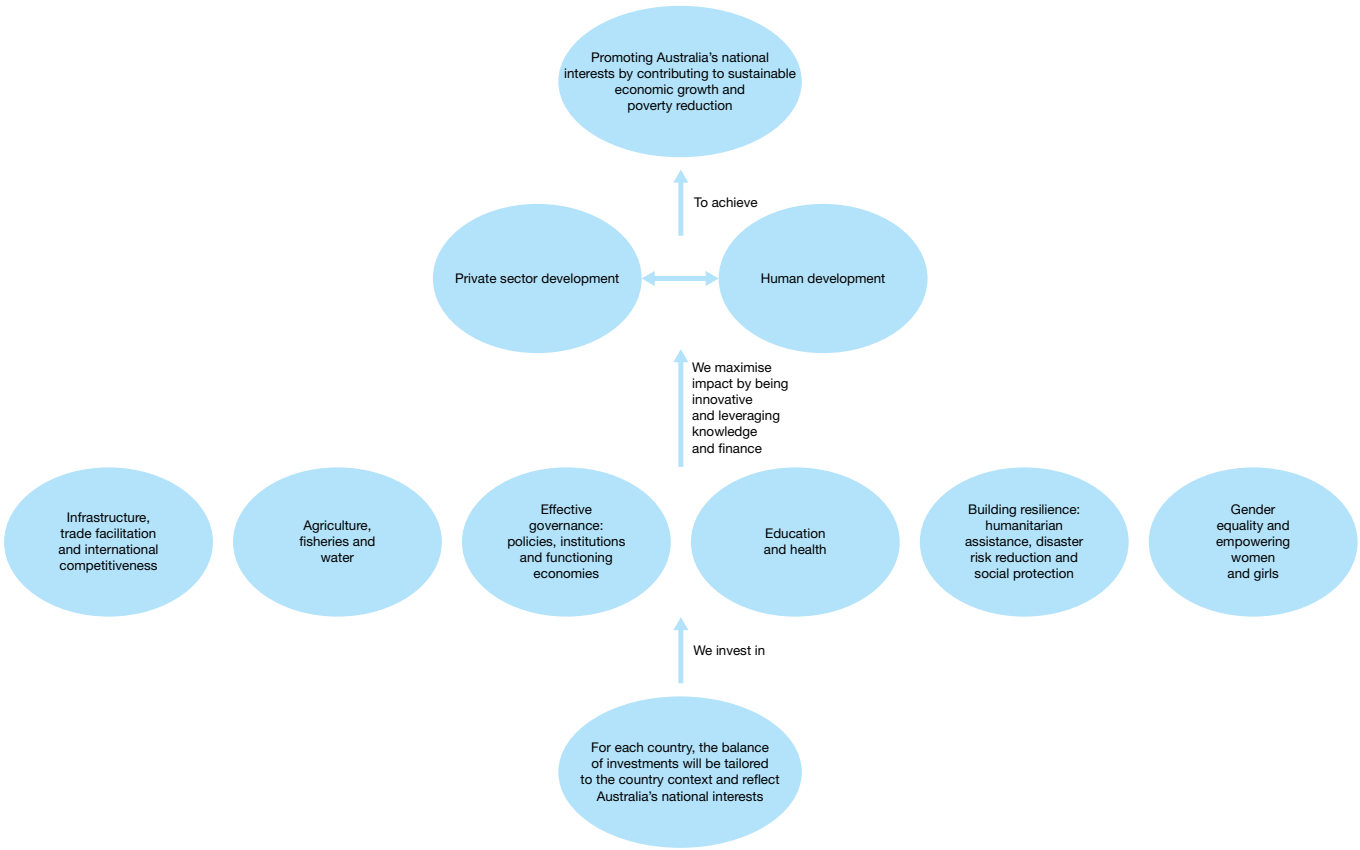
The Australian foreign aid program and private sector partnerships

Recently, the Australian Government has shifted its approach to focus more on investment in the private sector (see Source 2.1.4). The rationale is that increased employment opportunities in the affected areas creates confidence in the region. Coupled with improved standards of education, health and gender equality, it is believed that this type of investment can lift people out of poverty.

Recipients of aid: Papua New Guinea

The majority of Australian foreign aid goes to PNG. Australia has supported PNG for over 40 years, but the nation and its people still face many challenges. The country has a poor system of law and order, and lacks infrastructure. Over 40 per cent of the Papuan population lives in poverty. The standard of education is one of the lowest in the Asia–Pacific region, with one in five children not enrolled in school (see Source 2.1.5). Nearly half of the country's population is under 20 and it has some of the world's highest rates of domestic violence.

Further, PNG faces the constant threat of natural disasters from volcanoes, tsunamis and earthquakes.



Source 2.1.4 The Department of Foreign Affairs and Trade's explanation of the new foreign aid program

Australia's aid targets four areas: improving infrastructure for health, transport and education, and developing an efficient legal and judicial system. Australia is also trying to find ways to engage in the private sector.

Despite the challenges Australia is making a difference:

- testing for HIV/AIDS has increased threefold
- immunisation has increased by 4 per cent
- women have greater representation in the judiciary: there are now 900 female village magistrates
- antenatal and postnatal support has almost halved maternal deaths
- 390 classrooms were built in 2011–15
- over 2000 kilometres of road has been maintained
- in 2014–15, 34 800 people received financial literacy training, of which almost half were women
- voter awareness was raised in local elections.

The aim is to see Papua New Guinea reach upper middle income country status by 2050.

Asylum seekers and refugees

Asylum seekers are people who have fled their home countries and seek to live safely elsewhere, due to persecution on the grounds of race, religion or political status. A person is given refugee status when it is found that it would be genuinely unsafe for them to return to their home country.

Australia's obligations to asylum seekers and refugees

Australia is signatory to seven separate human rights treaties, all of which include provisions for the treatment of refugees and asylum seekers. The most notable of these are the International Covenant on Civil and Political Rights (ICCPR) (1966) and the **Convention** on the Rights of the Child (CRC) (1990).

While asylum seekers are in Australian territory the government must protect their human rights. According to the 1951 UN Convention on the Rights of Refugees, countries are not allowed to return individuals to countries where their life or freedom is threatened.

The treaties, however, are only a guideline; Australia does not have to abide by them by law.

Source 2.1.5 Foreign aid helps Papuan children to access books.

Criticism of Australia's asylum seeker policies

Australia has strict policies regarding asylum seekers. Under the *Migration Act 1958* anyone who arrives in Australia without a valid visa must be held in **detention**. This can be for any length of time, until a visa is arranged or the person is deported.

Since 1992, asylum seekers arriving by sea must be processed outside Australia. Australia has offshore processing facilities in Nauru and Manus Island.

In these facilities asylum seekers are processed according to the laws of those countries, not Australian law. While this process is not prohibited by international law, the same human rights regulations still apply.

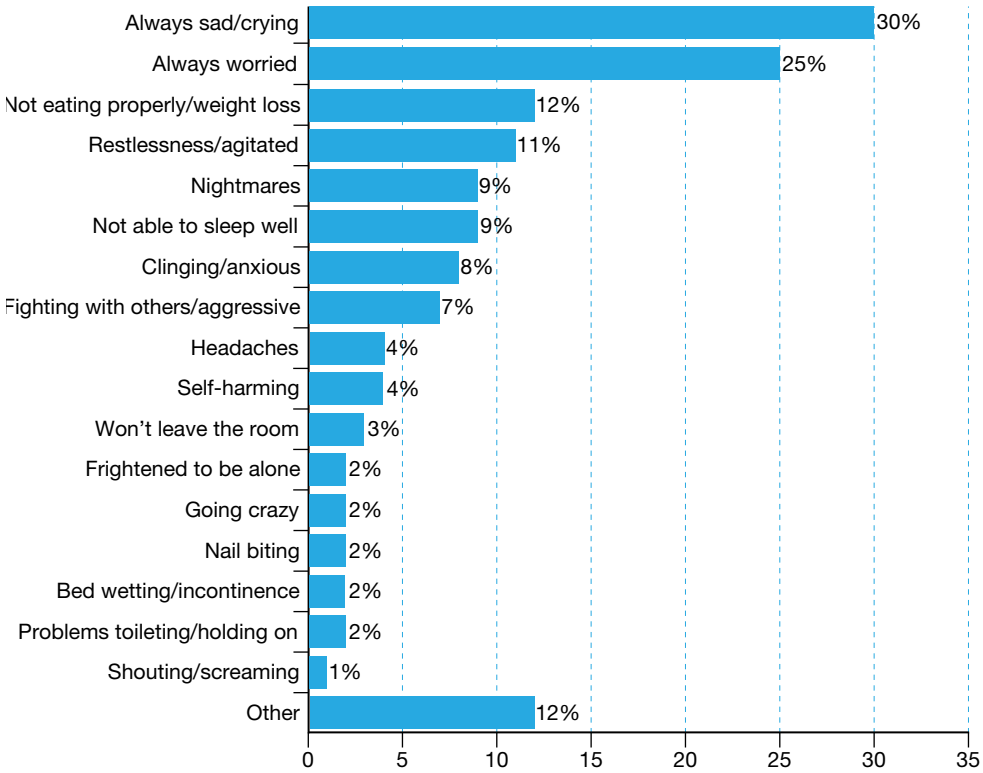
The United Nations Human Rights Committee has repeatedly found Australia to be in breach of its international obligations under Article 9.1 of the ICCPR (see Source 2.1.6). The major concerns are as follows:

- detention is unlimited: as of November 2015 the average time spent in detention was 446 days, and some asylum seekers had spent two years in detention
- cases are not dealt with on an individual basis
- there is no legal assistance is provided for asylum seekers if they believe that their human rights are being abused
- the detention facilities are not appropriate for long stays
- asylum seekers live in tents, with little privacy, under harsh conditions
- children are detained and have limited access to education or recreational space
- both adults and children detained for long periods have an increased risk of self-harm and mental illness
- reports of rape and ill-treatment have been made by detainees on Manus Island.

Australia has been encouraged to seek community-based alternatives rather than mandatory detention. The Human Rights Commission of Australia regularly conducts inspections and issues reports in an attempt to raise awareness of international standards. In April 2015, the federal government introduced fast tracking to speed up the visa-issuing process.

In February 2016, the High Court of Australia ruled that offshore detention in Australia is lawful. However, in April 2016 the Papuan High Court ruled that detention on Manus Island is illegal. In August 2016, it was announced that the Manus Island detention centre would close, but no further details were given on the closure or where the asylum seekers would go.

Responses by children and parents to the question: How has your emotional and mental health been impacted by detention?



Source 2.1.6 Some effects of detention on children, from the Australian Human Rights Commission 2014 report, *The Forgotten Children*

ACTIVITIES

Remembering and understanding

1. Explain how peacebuilding is different to peacekeeping.
2. Why has Australia decided to focus on investing in the private sector in developing countries?
3. How has Australia contributed to improving the health of people in Papua New Guinea?
4. Explain how Australia's offshore detention centres conflict with its role as signatory to seven different human rights treaties.

Applying and analysing

5. Use a PMI chart (plus, minus, interesting) to analyse Australia's involvement with the United Nations.
6. Create a concept map or collage that demonstrates some of the ways that Australia has fulfilled its role as a global citizen.

Evaluating and creating

7. Evaluate the description of Australia as 'a politically and economically stable country'. Do you agree? Give reasons for your answer.
8. Imagine you are a soldier on the UN mission UNTAET to Timor-Leste. Write a letter back home describing some of your daily tasks and responsibilities as a peacekeeper.

UNIT 2.2

The role of the High Court

The High Court

The High Court of Australia is Australia's highest court. At Federation in 1901, the new Australian Constitution came into effect. Proud of what had been created, a constitution to guide this new nation, the drafters wanted to safeguard it. A hierarchy was created within the judicial system to ensure that all laws passed, whether at local, state or federal level, must be in accordance with the Constitution. Under Section 71 the High Court assumed this responsibility.

The principal function of the High Court is to interpret the Constitution and settle any disputes that arise over its meaning. In addition, it can be called upon to:

- correctly interpret and apply the law
- hear appeals from the Supreme Courts of the states and territories, the Federal Court and the Family Court
- hear disputes between states or disputes involving the federal government
- decide on cases of special federal significance. The High Court can be asked to determine if a law is constitutional.

Source 2.2.1 The High Court of Australia in session

The High Court in operation

The nature of the cases the High Court deals with is extremely varied. Some of the key areas of law include tax, property, family and criminal. Dealing with appellant cases constitutes most of the court's time. An appellant case is one in which a party appeals to the High Court to overturn a decision of a lesser court. Having an appeal heard by the High Court is not a right. Appellants must persuade the Court in a preliminary hearing that there are special reasons to hear their case. It is also a very expensive exercise.

The composition of the High Court

The High Court is comprised of seven high court justices: one chief justice and six justices. The justices are normally barristers (lawyers who have been 'called to the bar' who can then represent clients in court) who have served as judges in other courts. Justices are appointed by the Governor-General on the advice of the Prime Minister.

Decision-making

If the case pending is presided over by a single justice, the decision rests with them. In cases where more than one justice is presiding and the decision is not unanimous, the majority prevails. Therefore three, five or seven justices sit, to allow a majority to be reached. The Court will not deliver its verdict immediately but rather 'reserve' its decision to be handed down at a later time. The justice prepares written notes, to be distributed and recorded in law reports once a decision has been announced. All decisions are final and binding within all courts of law in Australia.

Interpreting the Constitution

If the High Court finds that legislation or a part of the legislation is unconstitutional, the High Court has the power to overturn it. For example, in 1950 the government passed a law declaring the Communist Party of Australia was illegal. The High Court decided that the law was unconstitutional. The government had to accept this decision and the law was overturned.

Tiers of government

The Constitution sets out the powers that the federal government has when making laws. For example, the federal government has been allocated exclusive areas of responsibility such as trade, defence and immigration. This is because when federation occurred the states did not want the Commonwealth to have more lawmaking power than they did.

At times, the High Court may be asked to decide whether a law passed by the Commonwealth is within their constitutional power. If the High Court finds

that the federal government has not acted within the bounds of the Constitution, the law is invalid. In the case that the federal government felt strongly about the need for a law in the certain area, it would mean that the Constitution would have to be amended. This can only happen via a referendum.

Guidelines used for interpreting the Constitution

Australia has changed significantly—culturally, economically and socially—since the Constitution was originally drafted in the 1890s. This can make it difficult for justices to interpret the meaning of the Constitution with regard to modern legislation.

Serving on the High Court carries a large responsibility as justices try to protect and preserve the integrity of the Constitution. Australian laws need to remain predictable and certain in order for the rule of law to be maintained and respected. Yet they must also retain a level of flexibility to adjust to changing circumstances or expectations. Guidelines have been established to assist justices with their interpretation of the Constitution. They may choose to apply one or a combination of the following:

- interpret the Constitution exactly as written
- follow what the founders of the Constitution originally intended
- apply the document to contemporary society
- consider the needs of the nation and the people.

Over the years, decisions made by High Court justices have increasingly extended the influence of the Commonwealth at the expense of the states and their powers.

Famous High Court cases: Mabo 1992

One of the most influential cases in the High Court was brought by Eddie Mabo. He believed that the tiny island of Mer in the Torres Strait should be returned to its traditional owners, the Meriam People. After a 10-year battle, the High Court ruled in favour of the Meriam People. The High Court found that native title could be said to exist in certain circumstances and overturned the precedent of terra nullius. The government then passed the *Native Title Act 1993* to support the High Court's decision.

Source 2.2.2 Eddie Mabo (left) and and his neighbour Jack Wailu on Mer Island, in 1990

ACTIVITIES

Remembering and understanding

1 What is the principle function of the High Court?
2 What does unconstitutional mean?

Applying and analysing

3 Explain why you think areas such as trade, defence and immigration are the federal government's responsibility rather than being allocated to the state governments.
4 Use a T-chart to record all the advantages and disadvantages of using a referendum to change the Constitution. Use research on previous constitutional referendums in Australia to assist you.
5 Use a mind map to record as many examples of modern legislation as you can think of that would not have been referenced in the original Constitution.

Evaluating and creating

6 Research further into the Mabo case and write a newspaper article about the historical event, including detailing the role of the High Court in the case.

UNIT 2.3

International agreements

Defining international treaties

A treaty is an international written agreement between nation states. Governed by international law, treaties contain mutual understandings and intentions that help guide how nations relate to each other.

The importance of international treaties for Australia

With increased globalisation, international treaties are becoming more important, particularly for a country such as Australia. Australia is considered to be a 'middle power'—it does not carry the weight of larger countries like the United States or China. Negotiating international treaties allows Australia to have a global voice and prevent economic or strategic isolation. Australia's geographical location is also an advantage. Its cultural links to Europe and America and geographical position in the Asia–Pacific region provides unique cultural, economic and political insights.

The impact of treaties upon Australia

When a nation signs an international convention or treaty, it is an expression of its political sovereignty (ability to make its own decisions). However, the act of signing a treaty does not make it legally binding. The terms of a treaty become binding only if the signatory nation's laws change to reflect the conditions of the treaty. There is an expectation, however, that in signing an international treaty a government will try to honour the conditions as closely as possible. Without such a commitment, the treaty has no real authority or meaning.

Major international treaties signed by Australia

Nations are not always able to deal with problems in isolation. Issues such as drug trafficking, war, people smuggling and environmental degradation cross international borders. To resolve these issues, countries must cooperate with each other.

The World Heritage Convention

The World Heritage Convention (WHC) was adopted in Paris, 16 November 1972. Australia became one of the first countries to ratify (confirm agreement with) the Convention in August 1974. An initiative of the United Nations Educational, Scientific, Cultural Organization (UNESCO) the convention seeks to preserve sites of outstanding universal value.

Under the WHC, the World Heritage List includes sites in two categories: natural and cultural. Sites of cultural value include monuments, buildings or archaeological sites. Natural heritage refers to a natural feature or site that harbours rare species of animal and plant life, or geological and physiological formations that are rare and distinctive in beauty.

THE WORLD HERITAGE LIST

There are currently 851 sites on the World Heritage List; Australia has 19 sites (see Source 2.3.1) including the Sydney Opera House, Kakadu National Park, the Blue Mountains, the Great Barrier Reef and the Tasmanian Wilderness. Having a listed site elevates a country's international profile. It brings increased tourism and employment opportunities that create income for local communities.

THE WORLD HERITAGE COMMITTEE

The World Heritage Committee administers the WHC. It selects new sites for listing, decides who qualifies for international assistance for their heritage sites, and manages the World Heritage Fund. It also identifies heritage sites that are in danger. Australia has served four terms on the committee.

RESPONSIBILITIES UNDER THE TREATY

Countries have a responsibility to preserve and protect their heritage sites. This includes planning programs to ensure protection of a site in the long term and investing in the use of technology. If a nation cannot pay for the upkeep, the UNESCO World Heritage Fund

Source 2.3.1 Dawn at Purnalulu National Park, one of Western Australia's World Heritage sites

can assist with financial costs. Australia's obligations under the WHC are enacted under the *Environment Protection and Biodiversity Conservation Act 1999.* This is evidence of Australia's commitment to the principles of the WHC.

CONCERNS FOR THE GREAT BARRIER REEF

Queensland's Great Barrier Reef could be placed on the WHC danger list. The danger list is normally reserved for sites in war zones or under threat from natural disaster. Experts believe the state and federal governments are not acting quickly enough to stop the destruction of the reef (see Source 2.3.2). Mining in Queensland is also having a negative impact.

Source 2.3.2 Greenpeace campaigns to raise awareness of the degradation of the Great Barrier Reef

International Convention on the Elimination of All Forms of Racial Discrimination

The International Convention on the Elimination of All Forms of Racial Discrimination (CERD) came into effect on 4 January 1969. It was the second human rights treaty authored by the United Nations, after the 1948 Universal Declaration of Human Rights. Australia ratified the treaty on 30 September 1975.

The treaty states that racial discrimination occurs when a person is given unequal or different treatment because of their race, colour, descent, ethnic origin or nationality. This unfair treatment is a violation of human rights and freedoms.

OBLIGATIONS UNDER THE TREATY

When a country signs CERD they agree:

- not to engage in or endorse any type of racial discrimination
- to alter policies and change laws which enforce or create racial discrimination
- to prohibit organisations that promote racial discrimination, racial hatred and violence
- to ensure that victims of discrimination are protected
- to recognise that creating laws does not erase racism alone; it needs to be supported through education and a change in political culture.

THE IMPLEMENTATION OF CERD IN AUSTRALIA

When the charter was initially signed, human rights in Australia had little protection constitutionally or legally. In signing the charter, however, there was an understanding that Australia wanted to uphold its key principles and would endeavour to make the necessary domestic changes.

- ***The Racial Discrimination Act 1975***—The Racial Discrimination Bill was introduced to federal parliament in June 1975. It took four attempts before the bill was passed in both houses. The crucial element in its eventual victory was the argument that Australia should uphold its international obligations under CERD. Advocates for the bill also argued that common law was no longer a sufficient protection of human rights.
- ***Amendments to the Racial Discrimination Act***—In 1995, racial vilification provisions were added to the Racial Discrimination Act. Under Section 18C it is now unlawful to commit a public act that is reasonably likely to offend, humiliate, insult or intimidate an individual due to their race, colour, ethnicity or nationality. Section 18D outlined free speech exceptions. In 2014, there were proposals to change these provisions, but they were unsuccessful.

INTERNATIONAL SCRUTINY OF AUSTRALIAN FULFILMENT OF CERD

Signatories to the charter should provide a report to the CERD Committee every two years on how they are implementing CERD. Australia submitted its most recent report in 2016, and at the time of publication CERD's response had not yet been published. In its 2010 response to Australia's second last report the committee declared that, both legally and politically, Australia's implementation of the convention had been only partial and inadequate. The committee did respond positively to the Apology to the Stolen Generations (2008), the endorsement of the UN Declaration on the Rights of Indigenous Peoples (2009) and the introduction of the Close the Gap policy (2006).

Most of the concerns the CERD Committee had in 2010 about Australia's implementation of the charter were regarding treatment of Indigenous Australians and asylum seeker policies (see Source 2.3.4). Some of the recommendations included:

- an update of the Australian multicultural policy
- more entrenched protection against racial discrimination in Australian law
- greater contact and consultation with Indigenous communities
- preservation of Indigenous languages and increased funding for Indigenous legal aid
- finding an alternative to mandatory detention and devising more equitable strategies for processing asylum seeker applications.

Australia continues to try to adddress CERD's concerns. In 2013, Australia established the position of Racial Discrimination Commissioner to address racism and racial discrimination. The Commissioner is responsible for implementing the national anti-racism strategy and coordinating the national anti-racism campaign: Racism. It Stops with Me.

The Convention on the Rights of the Child

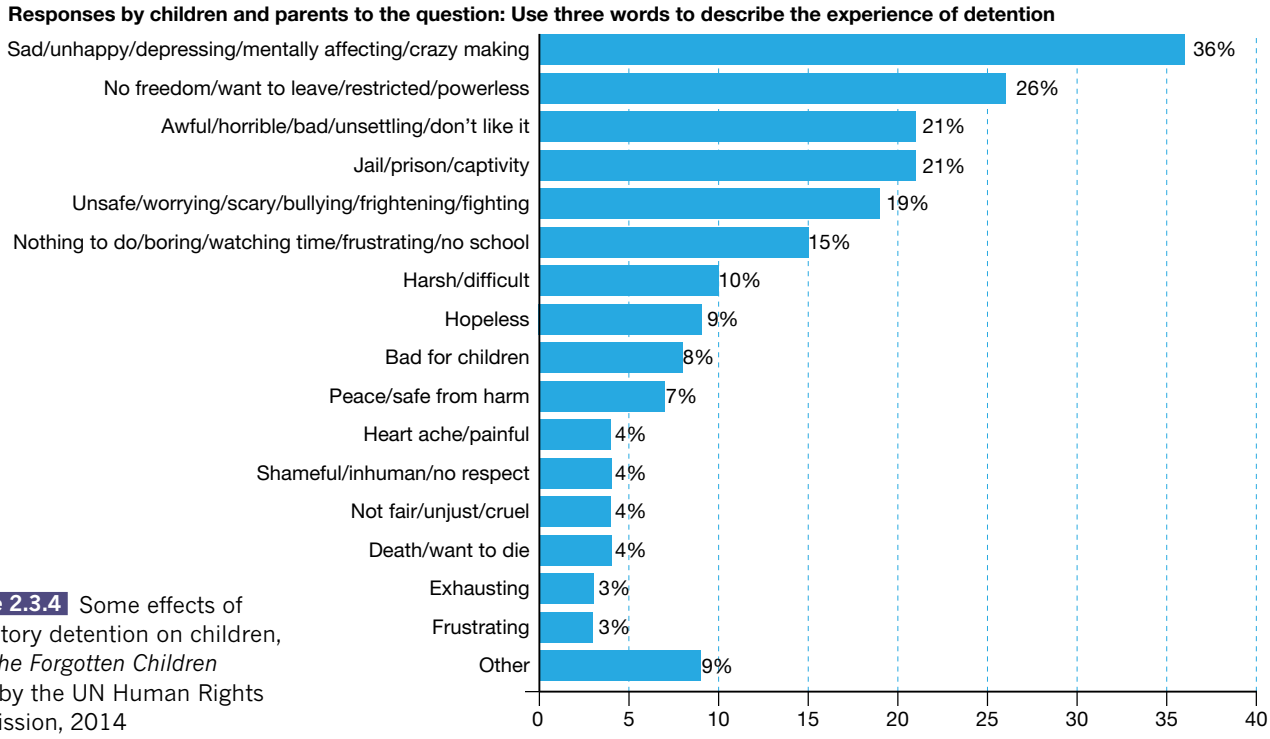
The Convention on the Rights of the Child (CRC) was signed in November 1989. The treaty was the first to highlight that children are entitled to human rights in the same way that adults are. The treaty states that all children have the right to protection, survival, health and education. Furthermore, they should be able to enjoy these freedoms without discrimination of any kind. Australia ratified the treaty in December 1990.

Source 2.3.3 Living conditions in detention centres in Nauru have been criticised in Australia and overseas.

CRITICISMS OF AUSTRALIA'S IMPLEMENTATION OF CRC

Australia has been criticised by both international and domestic bodies for its reluctance to implement measures that would align it more closely with the CRC.

Major concerns include the gap between Indigenous and non-Indigenous children in health and education. Indigenous children are over-represented in the juvenile justice and child protective systems. Child asylum seekers are kept in mandatory detention. Bullying in schools and online is increasing, along with levels of homelessness. Other extreme issues such as the practice of female genital mutilation need legal attention.



Source 2.3.4 Some effects of mandatory detention on children, from *The Forgotten Children* report by the UN Human Rights Commission, 2014

In 2013, a National Children's Commissioner was appointed to the Australian Human Rights Commission. It is hoped that this will be a positive step in improving the protection of children in Australia.

The Declaration on the Rights of Indigenous Peoples

There are an estimated 370 million Indigenous peoples in the world. The Declaration on the Rights of Indigenous Peoples was ratified on 13 September 2007. Initially the Australian Government refused to sign the treaty, but it declared its support under the Rudd Government in 2009.

Major themes of the treaty

The declaration lays out the minimum standards for the 'survival, dignity and well-being of Indigenous Peoples.' It states four main rights for Indigenous Peoples:

- the right to self-determination: the ability to decide what is best for them and their community
- the right to be recognised as distinct peoples: they are equal before the law but have the right to be different
- the right to free, prior and informed consent: they have the right to be consulted about proposed changes before they happen
- the right to be free of discrimination.

POLICY IN ACTION: GOLDFIELDS LAND AND SEA COUNCIL

The Goldfields Land and Sea Council in Western Australia has developed a mining policy that guides the Council's decision-making on mining-related activity. The policy adopts human rights standards by requiring the consent of the traditional owners of the Goldfields–Esperance region before mining-related activities are approved.

Australia's implementation of the declaration

There have been positive steps towards fulfilling the obligations of the declaration. Former Prime Minister Kevin Rudd apologised to the Indigenous community for past government policies that inflicted loss and suffering. It was viewed as a positive move towards reconciliation with Indigenous peoples. Other important advancements include:

- the recognition of Native Title
- 'Close the Gap': an initiative to improve Indigenous life expectancy. The aim is to improve quality of and access to healthcare and to ensure that life expectancy is equal for everyone by 2030.
- establishment of the National Congress of Australia's First Peoples: the Congress is a company structured to ensure equal representation of men and women on the national executive and the ethics council
- 'Recognise': a campaign to acknowledge Indigenous Australians in the Constitution. In 2010, Prime Minister Julia Gillard set up an expert panel to lead a national conversation as to how this can be achieved.

Despite the positive steps there is a vast amount of work to be done for Indigenous Australians' human rights. Racism is prevalent in society and living conditions are well below the standards of non-Indigenous Australians. Currently, Aboriginal and Torres Strait Islander people make up 27 per cent of all sentenced prisoners, and 29 per cent of unsentenced prisoners, despite comprising only 3 per cent of the population.

ACTIVITIES

Remembering and understanding

1 Explain what is meant by Australia being a 'middle power'.
2 Provide one example of how signing a treaty has led to a change in law in Australia.
3 List some of the ways that Australia has not shown a commitment to the Convention on the Rights of the Child treaty it signed in 1990.

Applying and analysing

4 Use a mind map to compile a list of as many global issues that you can think of that require countries to work together to resolve.
5 Choose one of Australia's World Heritage Sites listed and explain its cultural and environmental significance to our country.

Evaluating and creating

6 Choose a natural or cultural site that exists in Australia that is not currently on the World Heritage List. Write a letter to the World Heritage Convention to try to persuade them to include your chosen site on the list.
7 In pairs, formulate a list of recommendations for the Australian Government on ways they can further implement the Convention on the Elimination of All Forms of Racial Discrimination.

Inquiry tasks

Australia as a global citizen

Appraise the positive contributions that Australia has made to the international community through its membership of the United Nations. Refer to the examples provided in this chapter and take notes on the various roles that Australia has played in the following areas:

- the UN Security Council
- the UN Human Rights Council
- peacekeeping
- foreign aid
- asylum seekers and refugees.

Use your findings to develop a storyboard that could be used as the basis for a government advertisement. Imagine that the purpose of this advertisement is to demonstrate and promote the positive ways that Australia fulfils its responsibilities as a global citizen.

Confronting criticism

Examine the criticism that exists within the global community with respect to Australia fulfilling its international obligations. Pay particular attention to the criticism that exists in relation to Australia's commitment to the *International Covenant on Civil and Political Rights* (ICCPR) and in particular,

Source 2.4.1 The four guiding principles that form the basis of the United Nations Convention on the Rights of the Child

its treatment of asylum seekers. Use newspapers, television stories and interviews, blogs, or the websites of non-government organisations as the basis of your research. Compare and contrast the nature of the criticism that exists at the local, national and international level. What has been the response of the Australian Government to these claims? Present your findings as a one-page summary.

Putting the High Court on trial

Argue either for or against the High Court's ability to interpret the Australian Constitution by conducting a trial in your classroom. Through a number of 'landmark' cases, the way that the High Court has decided to interpret the Constitution has significantly altered the federal balance of power, giving more power to the Commonwealth Government.

Do you support the High Court's ability interpret the Constitution? If so, then you will be working as a defence lawyer in the classroom trial. If you are against the High Court being so powerful, then you will be a prosecution lawyer.

Once everyone has decided whether they belong to the prosecution or the defence, each side should break into small teams of 3–4 lawyers. A team from the prosecution and a team from the defence should be assigned to investigate each of the following High Court cases, all of which were 'landmarks' of constitutional interpretation:

- Engineers' Case
- Uniform Tax Case
- Communist Party Case
- Tasmanian Dam Case

Now put the High Court powers of constitutional interpretation 'on trial'. Appoint a judge to oversee proceedings and to ensure fairness. Have each landmark case presented to the class, in turn, by the teams of lawyers. For each case, prosecution lawyers should orally present their arguments against the High Court, citing evidence from the case, followed by a response from the defence lawyers. At the conclusion of the trial the judge should present their findings, along with the reasons for their decision.

Negotiating an agreement

Formulate a new international agreement that you feel Australia should champion at the United Nations. Brainstorm the most pressing economic, environment and socio–political issues that confront the international community at this time. Select the issue that you feel is most important and decide on three or four guiding principles that should underpin global action on this issue. Write these down in simple, straightforward language. An example of how to do this is shown in Source 2.4.1. Be prepared to present your ideas to the class.

GLOSSARY

asylum seeker person who has fled their home country due to persecution on the grounds of race, religion or political status, and who seeks to live safely elsewhere

ceasefire the suspension of fighting in a war

convention an international agreement on a particular subject

detention a residence where people are held with restricted movement and freedom

global citizen an individual, institution or government that understands the rights and responsibilities of humans at a global level, transcending geographical and political borders

governance the process and rules by which decisions are made and implemented within entities, such as national and state governments and corporations

gross national product the total value of all goods and services produced in a country in a period of time

peacebuilding long-term strategies aimed at preventing nations from falling back into conflict

ratified adopted or approved, for example of legislation

refugee a person for whom it is unsafe to return to their home country due to persecution

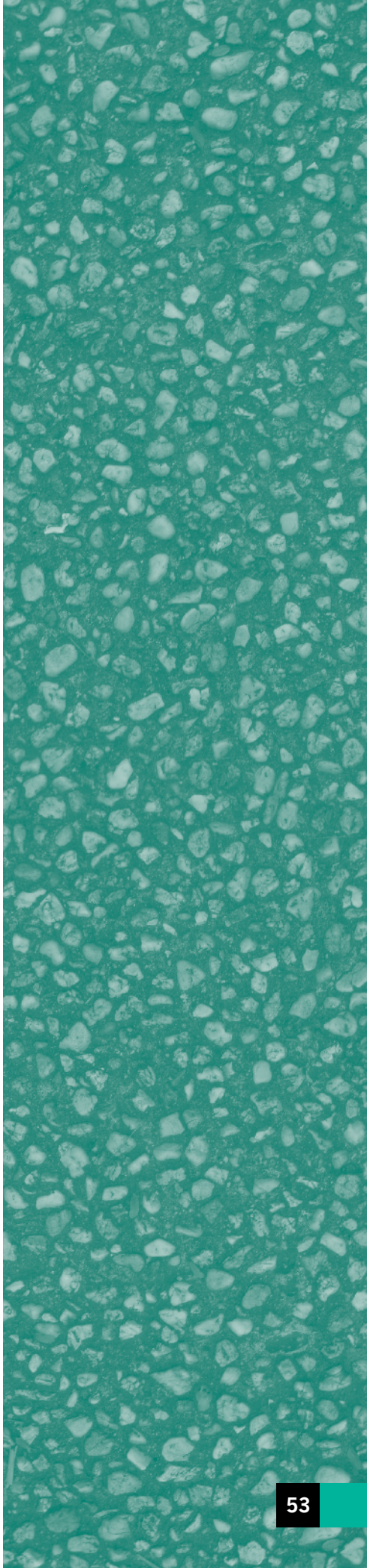
resolution a formal expression of opinion or a decision


RESPECT EXISTENCE
OR
SUSTAINABLE FUTURE
Dignity not Detention!
Mahinda Rajapaska,
NO CRIME TO SEEK ASYLUM
LAND RIGHTS FOR GAY WHALES
END MANDATORY DETENTION
WE ARE MANY THEY ARE FEW
HUMAN NEED NOT CORPORATE GREED
END MANDATORY DETENTION OF REFUGEES
LAND RIGHTS NOT MINING PROFITS
Asylum is a HUMAN RIGHT
FREAK OUT

CHAPTER 3

Australia's democracy

Democracy is faced with many challenges. Increased use of technology and the growing interdependence of economies worldwide make democracy vulnerable. Terrorism, cybercrime, international drug rings and the growing refugee crisis can strain international relations and **destabilise** nation states that are attempting to transition to democracy. Within Australia, vested interest groups pose a bigger threat to the legislative structures while corruption attempts to erode democratic institutions. In order to safeguard their democracy, Australians must maintain respect for the **rule of law** and continue to hold government accountable for its actions.



Source 3.0.1 Occupy Perth protesters march down the Murray Street Mall, Perth. The protest was timed to coincide with the start of the Commonwealth Heads of Government Meeting, 2011.

Threats to democracy

Organised crime, corruption, lawlessness and vested interests all threaten to destabilise democracies worldwide. These activities undermine and attack the principles of democracy. They seek to fulfil the goals of the self-interested individual or group rather than contribute to the betterment of society.

Influence of vested interests

Defining vested interests

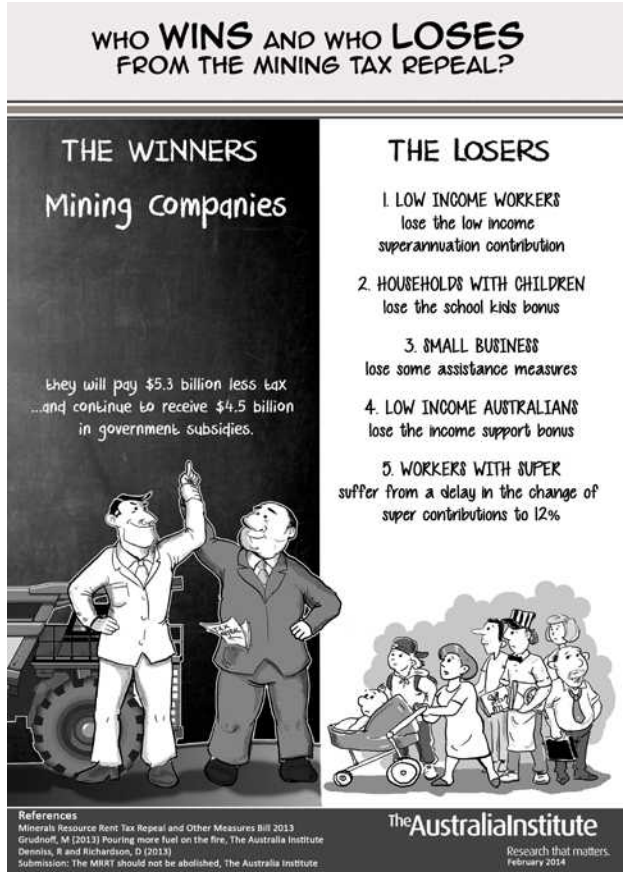
Vested interests are individuals or groups within Australia that demand special privileges. They often pressure or **lobby** the government into formulating policies and enacting legislation to their advantage. Often disguised as being in the best interest of the nation, vested interests can be destructive to democracy. In the process of promoting their own objectives, real debate about important issues can become clouded or lost.

Vested interests include more than big business. Mining companies, think tanks, lobby groups, refugee advocacy groups, education representatives and public health organisations all advocate to the parliaments for privileged consideration of their cause.

Dangers of vested interests to democracy

In democracies the demands of vested interest groups should be tempered for a number of reasons.

- Initiatives such as 'industry partnerships', grant programs and national frameworks can blur the lines between the government and the private sector.
- The government's overall **legitimacy** comes from the people who elect it. Allowing vested interest groups or powerful individuals outside parliament to have an undue influence on policy and legislation is a violation of the **sovereignty** of parliament.
- Companies often donate to political campaigns. This can influence the way politicians vote on bills and the bills they introduce.
- The vested interest can change the dynamic of political debate. Politicians are forced to manage the demands of vested groups rather than have an open discussion about the wider implications of policy.
- Public lobbyists are funded by taxpayers, with little accountability for the use of the money.



Source 3.1.1 The defeat of the mining tax in Australia demonstrated the success of vested interests in impacting the democratic process.

- Bodies that receive government grants and funding are less likely to **scrutinise** government policy, which is a key feature of living in a democracy.
- The media is increasingly reliant on the promotion of the vested groups. This undermines freedom of press and information.

THE ROLE OF LOBBYISTS

Despite the introduction of a national register for lobby groups in Australia little else has been achieved in the task of curbing their growing influence. It is argued that it is in the public interest to know which politicians are meeting with lobbyists and for what purpose. Current attitudes towards lobbying believe that deals are done behind closed doors and it is often to the detriment of the public good.

Currently, there are 266 lobby groups registered in Canberra, but many more groups conduct their own lobbying or are excluded from the register.

THINK TANKS

Think tanks contribute to policy debate through research papers, opinions polls and pieces, hosting lectures, and advising policy makers. Most of the funding comes from anonymous wealthy financial donors. It can mean that it is difficult to work out their agenda.

Organised crime

The *National Crime Authority Act 1984* defines organised crime as offences that:

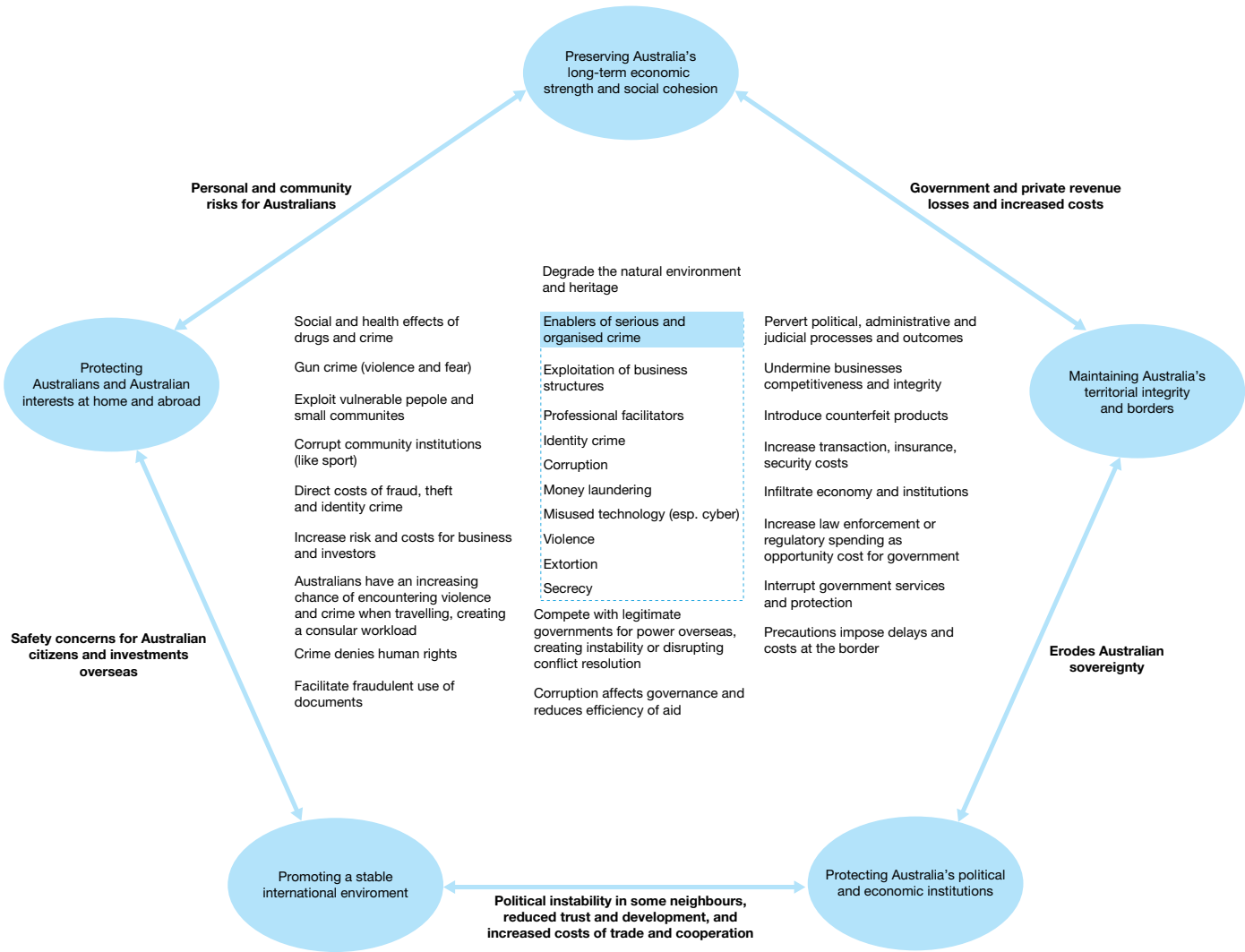
- involve two or more offenders and substantial planning and organisation
- involve sophisticated methods and techniques
- are usually committed with similar offences
- involve theft, fraud, tax evasion, currency violations, illegal drug dealings, obtaining financial benefit by immoral behaviour by others, extortion, corruption, bankruptcy and company violations, harbouring of criminals, forging of passports, arms dealings or importation or exportation of fauna or that involves matters of a similar kind.

In its most recent report, the Australian Crime Commission commented on the increased levels of sophistication employed by organised **crime syndicates**. The internet and technology have not only assisted criminal activity, but they have also created new ways of committing crimes, such as infiltrating legitimate and **illegitimate markets**.

Effects of organised crime on democracy within Australia

Organised crime affects everyone. It erodes the ability of the government to look after the public. Source 3.1.2 explores some of the impacts of organised crime.

Overall, the Australian Crime Commission estimates the cost of organised crime at $15 billion a year.

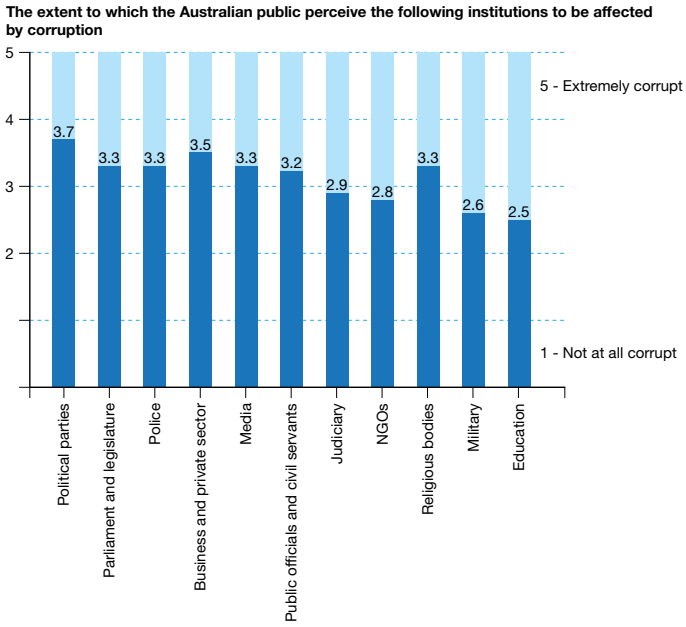


Source 3.1.2 The impact of organised crime on Australian society

Global impacts of organised crime

- Governments and citizens in the developing world are the common target for organised crime. Developing countries are often susceptible to corruption. They lack the technology and resources to fight sophisticated crime syndicates.
- Organised crime can create mistrust between nation states, preventing goodwill and creating political instability within a region. This serves as a deterrent to trade, investment and legal assistance.
- Australian businesses are reluctant to invest in countries where bribes and corruption are common. This means that countries needing the revenue from foreign investment miss out.
- Australian foreign aid money is wasted.
- The Australian Defence Force and Australian Fderal Police can be affected when they go to fight in an overseas conflict.

Australians are not just victims when it comes to international crime. Tourists buying cheap imitations of designer goods could be funding terrorist groups. Australian sex-tourists have been convicted of child-sex crimes in South-East Asia. Their demand for child sex keeps the practice alive. Similarly, Australian travellers who take illegal drugs and solicit prostitutes continue to keep organised crime rackets in business. They exploit countries already weighed down by significant social and economic problems.



Source 3.1.3 The extent to which the Australian public perceive these institutions to be affected by corruption. Transparency International, 2013

Organised crime has the effect of undermining the relationship between Australia and its regional neighbours. They are forced to concentrate their resources on fighting crime rather than on building **infrastructure** and institutions of good governance.

Corruption

Defining corruption

Corruption is the abuse of public office for private gain. It can pervade all aspects of political life. When committed by the highest public servants, corruption erodes the trust of the population and prevents democracy from operating as intended.

Corruption can affect public servants, government officials, police, politicians and judges. It can involve the movement of people, money, drugs and weapons. Other examples include the acceptance of a bribe from a developer or investor, or using parliamentary funds for private use.

Targets of corruption

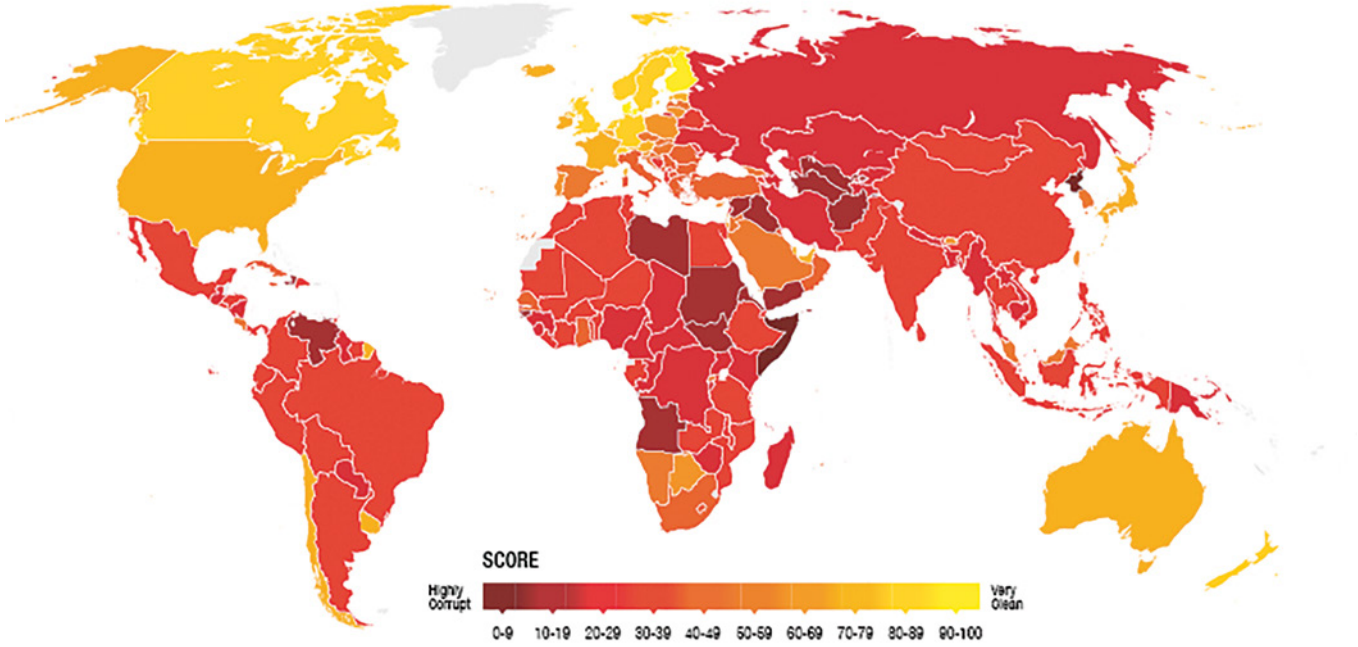
- The executive within a government is often the target for corruption because its members are in positions of influence and power.
- Jurors can be bribed, lawyers can have a conflict of interest, and judges may be seeking political gains.
- Members of the electorate can be offered bribes in return for their votes.

The impact of corruption on Australia

Ultimately, corruption prevents democracy from operating successfully. It undermines the rule of law, can lead to human rights violations, distorts markets and can erode quality of life. It can have other serious impacts for democracy, leading to:

- loss of trust in politicians and the political system
- degradation of the environment: this occurs through illegal access to natural resources
- inefficient government
- ineffectual officials
- more expensive consumer products
- compromised electoral processes.

It is often the most vulnerable and poorest who are the most affected by corruption. Furthermore, newer democracies struggle to retain legitimacy in the face of corruption. Without a history of trust in the institutions and processes, people may decide to abandon the system.



Source 3.1.4 A comparison of corruption in the global community. The colours on the map, as shown in the scale, range from yellow (low levels of corruption) to red (high levels of corruption). Transparency International, 2015

Australia and global corruption

Corruption is a global problem. Corruption continues to prevent some developing nations from achieving peace and stability for their societies. Australia works with the international community to try to prevent corruption and bring the perpetrators to justice.

CORRUPTION PERCEPTIONS INDEX

The Corruption Perceptions Index measures the perceived level of public sector corruption worldwide. The index, which is published every year by Transparency International, shows that 68 per cent of countries have a corruption problem, with no country completely immune. The latest index shows that Australia's level of corruption has increased.

Globally, the World Economic Forum estimates that the cost of corruption is about US$2.6 trillion each year.

Lawlessness

Part of the reason for the success and strength of Australian democracy is its respect for the rule of law. When people take the law into their own hands or blatantly disregard the importance of the law, the foundation of democracy is threatened.

Characteristics of a lawless society

Often, lawless societies experience civil unrest. Corrupt political institutions and officials show little or no respect for the rule of law. Human rights are neglected and abused, with limited consideration for the opinions and freedoms of others. Lawless societies are often targets for terrorist acts, whether from within or from outside forces.

ACTIVITIES

Remembering and understanding

1 Name some of the main threats to democracy.
2 Identify, in your own words, one way that vested interests pose a threat to democracy.
3 What is one way that lobbying can have an impact on our democracy?
4 List different ways that the public's trust can be eroded as a result of vested interests, lobbyists, think tanks, organised crime and corruption.

Applying and analysing

5 Conduct research into a case of corruption in Australia that has involved a politician, member of the police force or member of the judiciary. Use the five Ws and H (who, what, when, where, why and how) to examine the event.

Evaluating and creating

6 Create a case for the benefits of vested interests to a democracy.
7 Design a political cartoon that demonstrates one way that vested interests, lobbyists or corruption can impact our democracy.

Protecting democracy: Safeguards

Safeguards of Australian democracy

The democratic system in Australia has a long and successful history. People have recognised the value of the freedoms that democracy provides. Going forward, domestic issues such as attitudes to education, healthcare and economic growth will also impact upon overall satisfaction with the system. Obstacles will continue to arise as technology improves, globalisation expands and the nature of war and civil unrest continues to evolve. What has been demonstrated is that democracy does embody universal principles that help withstand and embrace change.

Vulnerability of democracy

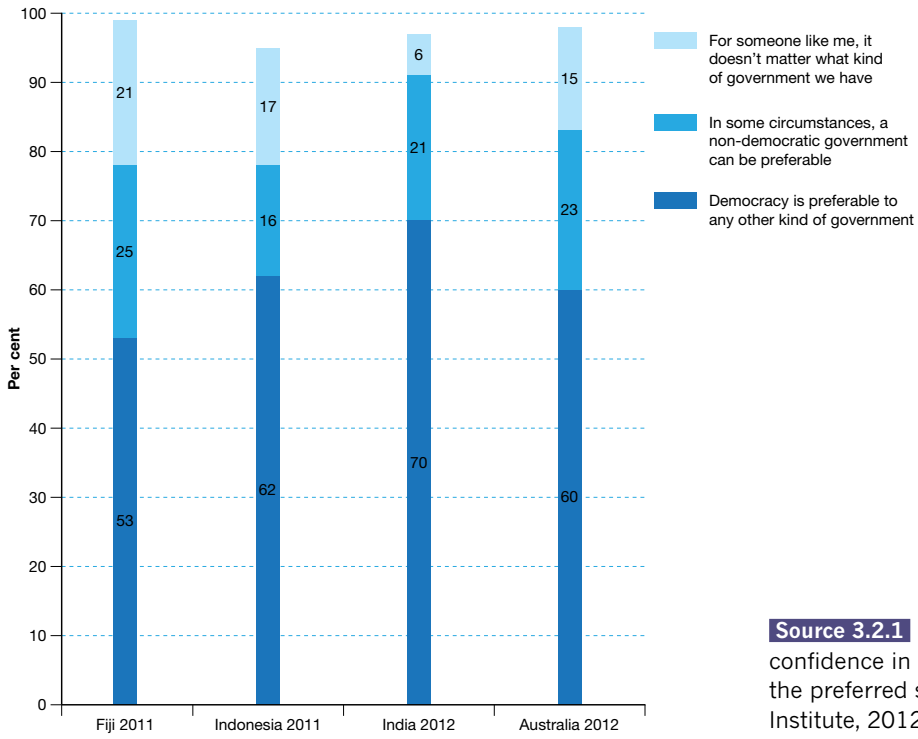
The nature of democracy makes it vulnerable to attack. This is because democratic systems allow themselves to be criticised and invite debate. Therefore, democracy will only work if it has the confidence and support of the people it represents; the government only rules because the people recognise its authority and support it. Some non-democratic countries find the transition to democracy difficult because they do not have a culture that lends itself to debate and tolerance of multiple viewpoints. There can also be a lack of faith in the system to protect its citizens with the same effectiveness as previous systems of government that have been tried. Democracy will fail if it prevents the punishment of those who try to **subvert** it. It will appear weak and easily corrupted.

Democracy as a preferred system of government

Despite its vulnerability and flaws democracy has proven itself in many different countries, including Australia. Even when public opinion shows a lack of support for democracy, it is usually short term and can be **rectified**.

- People can be unhappy with the performance of politicians, but they can vote them out.
- People can criticise government performance and express discontent, but it doesn't mean that an overhaul of democracy is necessary.

Australia has been involved in helping countries transition to democracy. For example, in 2012 it offered Fiji $2.65 million in AusAID funding to support free and fair elections in 2014.



Source 3.2.1 Polls demonstrating a general confidence in the value of democracy as the preferred system of government. Lowy Institute, 2012

Shared values of democracy

There are four principles upon which a democracy rests.

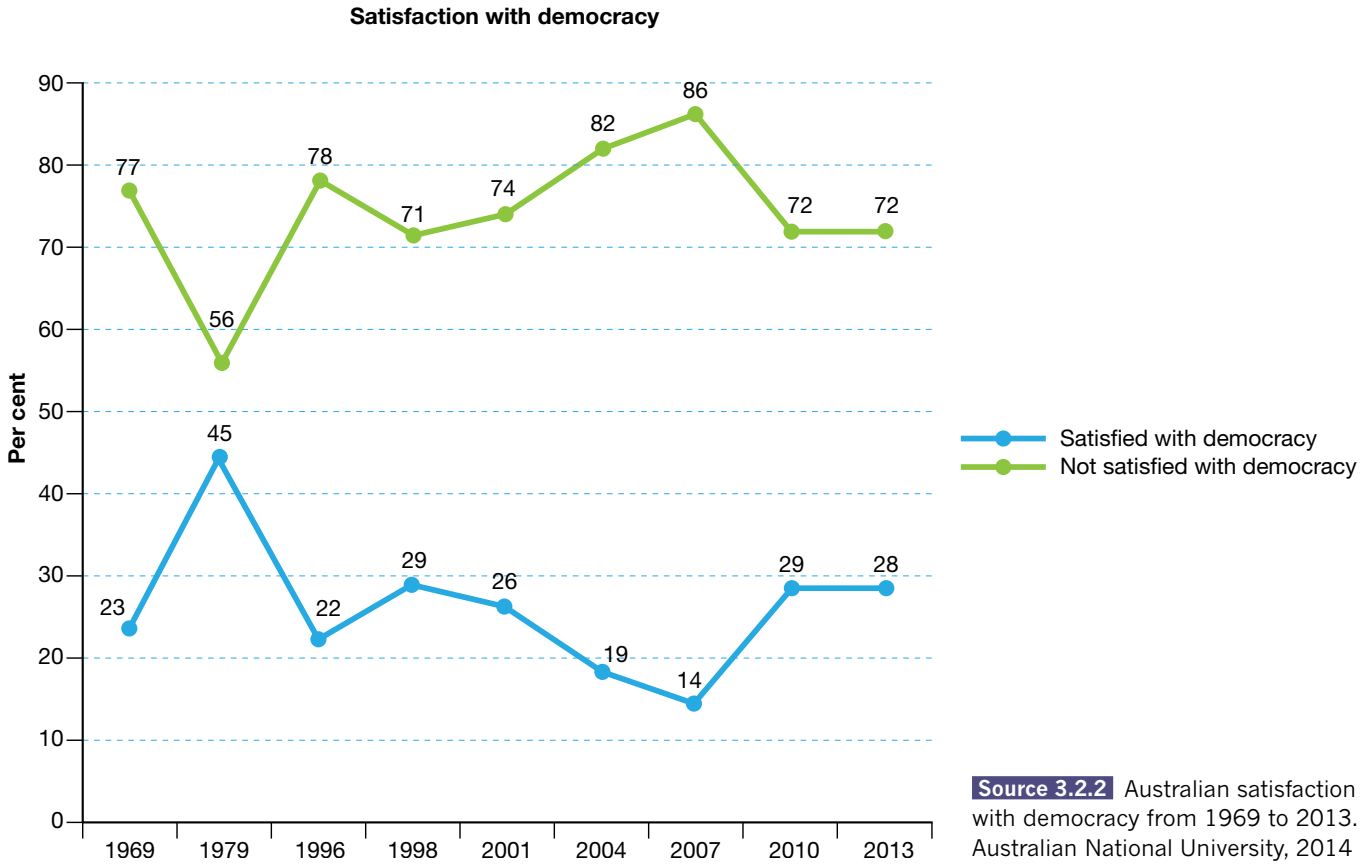
- Inherent belief in the individual: individuals are capable of being rational and possess a degree of morality.
- Progress: whether it is intended or not the world continues to change and develop. Democracies must adapt their framework to accept and work with change. Politics is about being able to compromise.
- Consensual society: ultimately people desire to live in a land which has order, stability and cooperation. Corruption, disorder and conflict are undesirable.
- Shared power: rulers must have the mandate of the people to rule. There must be checks and balances to ensure that rulers do not use power for their own ends. There is an inherent understanding that leaders serve their public.

It takes considerable time for these values to seep into the culture of a society. They need to be deeply embedded for democracy to take hold.

The defining values of Australian democracy

The following elements help to safeguard Australian democracy from being eroded:

- responsible government: the government is answerable to the parliament
- ministerial responsibility: ministers must accept full responsibility for decisions made by their departments
- sovereign parliament: government must seek the approval of parliament to enact or amend laws
- separation of powers: responsibilities are split between the executive, legislature and judiciary to prevent a monopoly of power by any one individual or group
- freedom of election and being elected
- freedom of press and information
- freedom of assembly and political participation
- freedom of speech, expression and religious belief
- respect for the rule of law
- adherence to basic human rights.



Source 3.2.2 Australian satisfaction with democracy from 1969 to 2013. Australian National University, 2014

Right to dissent within the bounds of law

The right to free expression and opinion is a vital component of democracy. This is why the right to peaceful protest is upheld. It allows all voices to be heard, both those of the majority and the minority.

Dissent

Dissent is a challenge to a dominant belief system. It often contests long held views or calls into question the powers of those in charge. Dissenters can have different motivations for their actions—it is not always to bring about positive political change or awareness of the plight of others. In order for dissent to be legal it must be non-violent.

There are three types of political dissent:

- protest and persuasion: including speeches, slogans, rallies and signing petitions
- non-cooperation: including consumer boycotts, embargoes and strike action
- intervention: including hunger strikes and sit-ins.

DISSENT AS A FORM OF SAFEGUARD

Australians have used protest successfully over the years to bring about significant changes. These include better working conditions, and voting and citizenship rights for Indigenous Australians, and environmental rulings, such stopping the building of the Franklin Dam. Protests about the Australian government's offshore detention policy for asylum seekers continue, such as the 2016 #LetThemStay campaign. Despite it not always being viewed in a positive light, dissent has proven to be a key safeguard of democracy by keeping governments accountable. It serves as a form of feedback for the government and prompts them to reassess their policy choices. If they do not compromise, they can be voted out at the next election.

PROTESTS AND DEMONSTRATIONS

Protests are used to express collective opposition to a particular situation. Carried out in a peaceful and effective manner, they can serve as a strong and unifying force to influence government decisions.

CASE STUDY: BIKIE LAWS

Strict anti-bikie laws were passed in Queensland in 2013. They allow the Attorney-General to declare organisations illegal without any court involvement. The penalties are extremely severe for anyone associated with an organisation that is declared illegal

Source 3.2.3 Activists rally against Western Australia's controversial anti-protest laws outside Parliament House in Perth, 23 February 2016.

(a mandatory minimum sentence of 15 years jail). The person convicted is labelled a 'vicious lawless associate'. The laws allow authorities to prevent bikies from associating with one another. They also impact upon freedom of association and assembly. They have attracted national attention, with protests launched in all capital cities to express concerns about the limits that are placed on individual liberties. The Queensland Government is under pressure to repeal the laws.

WHISTLEBLOWERS

Whistleblowers are insiders who shed light on illegal activity and misconduct in their workplace. It is not considered spying, but is defined as: 'the disclosure by organisation members (former or current) of illegal, immoral or illegitimate practices under the control of their employers to persons that may be able to effect action'. Due to Australia's 'anti-dobbing' culture, whistleblowing has not always been supported, with potentially negative **ramifications** for informants.

Whistleblowing often involves serious **allegations** that are generally in the public interest. They have exposed some of the following:

- police misconduct
- corruption
- dangerous and unsafe nuclear waste clean ups
- medical malpractice
- the mistreatment of asylum seekers.

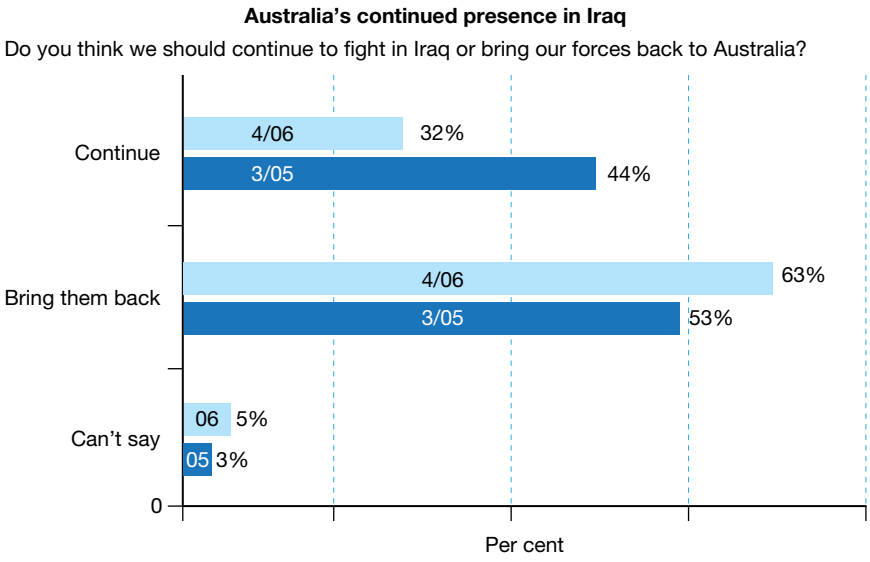
Currently the laws surrounding whistleblowing are complex and provide little protection for whistleblowers. The Human Rights Commission has urged the federal government to repeal much of the new legislation that adversely affects whistleblowers, such as the retention of metadata for up to two years.

CASE STUDY: WHISTLEBLOWING AND THE IRAQ WAR

The Howard Government's decision in 2003 to take part in the Iraq War was highly controversial. It sparked protests by around one million Australians. However, these protests did not stop the invasion.

While working as an intelligence officer for the Office of National Assessment, Andrew Wilkie (who later became an independent MP) revealed that no strategic assessment had been carried out on Iraq by Australian intelligence organisations. He asserted that the government was misleading Australians about the reasons for going to war. His claims went unheeded, but his decision to 'blow the whistle' let the public know that the reason for war, Iraq's alleged possession of weapons of mass destruction, was potentially false. Wilkie's allegations were eventually proven to be correct.

Source 3.2.4 In response to the Howard Government's decision to commit troops to Iraq in 2003, Australian protesters spread their anti-war message on the Sydney Opera House.



Source 3.2.5 Opinion polls on the support for the war in Iraq show how divided opinions were, supporting the idea that the public needs access to all the information in order to make an informed judgement. Roy Morgan, 2006

ACTIVITIES

Remembering and understanding

1. Explain how democratic systems 'allow' themselves to be criticised and debated.
2. Provide one example of how Australia's democracy exercises shared power.
3. Why is whistleblowing not a highly supported practice in Australia?

Applying and analysing

4. 'A country's democracy needs to change as the country does'. Discuss as a class.
5. In groups, use a concept map to provide examples of how the values of democracy are present in your life. Consider areas such as education, culture, health, politics, media, etc.

Evaluating and creating

6. Write a poem or some song lyrics that embody the principles of democracy in Australia.

Inquiry tasks

Threats to democracy

Differentiate between the following in terms of their impact upon democratic values:

- vested interests
- corruption
- organised crime.

Use the information presented in this chapter to begin your analysis. Develop your understanding of these threats to democracy by locating recent examples that have occurred either in Australia or overseas. Newspaper articles or an internet keyword search will assist you in this task. Explain, in one or two well written and carefully structured paragraphs, which of these you believe is the greatest threat to democracy and why.

Lobbying for change

Examine the Australian Government Register of Lobbyists by searching for its home page on the internet. Click on the link entitled 'About the Register'. Use the information provided here to make notes on the purpose of the register and the type of information that it contains. Now use your internet research skills to investigate whether a register of lobbyists exists in your state or territory. Compare and contrast the two registers using a PMI (plus, minus, interesting) chart. This will help you to analyse their advantages (pluses) and disadvantages (minuses), and to identify ideas that you find intriguing (interesting) as you examine the construction and intent of the registers.

Source 3.3.1 There are many ways to express a dissenting view. As a safeguard to democracy, all the words and actions used by those with a dissenting view must help to ensure that the protest remains peaceful.

Protecting our rights

Select what you consider to be the most important safeguard to Australian democracy from the following list:

- freedom of election and being elected
- freedom of press and information
- freedom of assembly and political participation
- freedom of speech, expression and religious belief
- respect for the rule of law
- adherence to basic human rights.

Develop a one-page factsheet to demonstrate the importance of the democratic safeguard that you have selected to be the most important. Your factsheet should begin by providing definitions of key terms. You should then demonstrate the value of this democratic safeguard with explanations of its establishment and development in an Australian context. Finalise your factsheet by providing examples of how this important concept has been applied within the Australian political and legal system.

A dissenting view

Construct a speech that you can deliver to the class that offers a dissenting view on a topic that you feel is important. Remember, a dissenting view is one which may contest views that have been held for a long time or challenge the dominant belief system.

You should firstly decide on the motivation for your speech. Is it to raise awareness? Is it to bring about change? Is it simply to offer a different perspective or to play devil's advocate? Whatever the motivation behind your speech, its intention should be to persuade the audience One of the keys to developing a strong argument is to successfully combine description with examples. This will enable you to develop persuasive explanations and helps to avoid simply standing up and stating your opinion.

Your speech should be written in an engaging style that is designed to connect with your audience. You should make use of persuasive language, and your tone should demonstrate confidence and strength.

GLOSSARY

allegation an unconfirmed claim of illegality or wrongdoing

crime syndicate a group of people working together to commit crimes

destabilise unbalance or cause uncertainty around

illegitimate market an illegal or irregular market

infrastructure basic foundations or systems of organisation

legitimacy established as acting in accordance with laws and principles

lobby influence or pressure government officials towards an opinion or interest

ramification a consequence or broader effect

rectified returned to its original state or made right

rule of law a legal principle that governments make decisions based on established laws and that all people are equal before the law

scrutinise monitor or review critically

sovereignty being supreme in authority

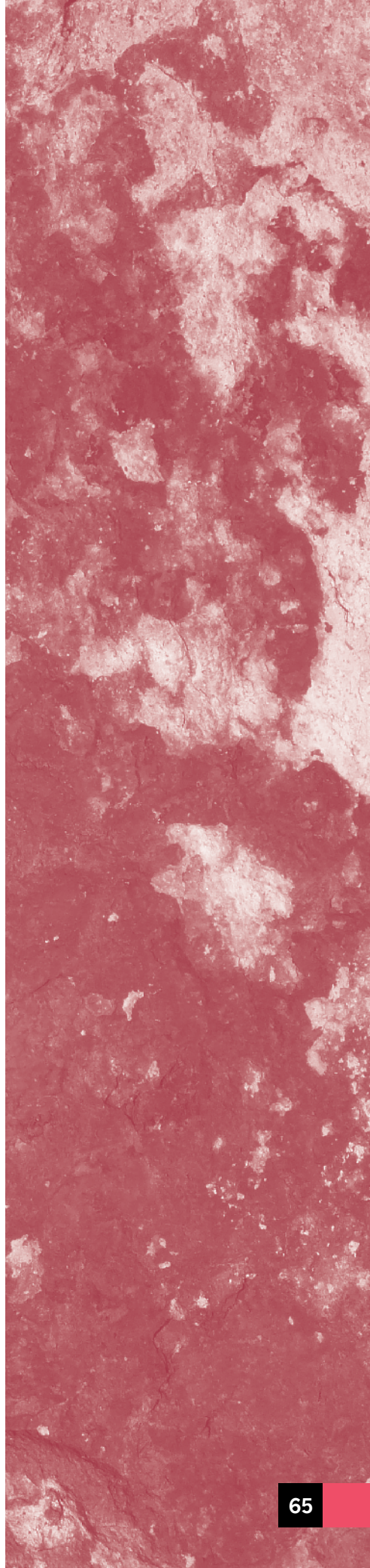
subvert cause the downfall of

CHAPTER

4

Economic performance

The fundamental aim of economic theory is to understand how people and countries can improve their **standard of living**. Data on unemployment, economic growth, inflation, imports and exports, and the housing market can provide some important insights into the current state of a country's economy or its economic performance. The challenge for governments is then to develop appropriate policies to promote sustainable **economic activity** that will make all citizens better off.



Source 4.0.1 Parliament House, Canberra, Australian Capital Territory

UNIT 4.1

Measuring economic performance

Economic indicators

All consumers and businesses are affected by the performance of the country's economy. **Incomes**, patterns of employment, the demand for particular products and many other factors will all shift as the level of economic activity changes. Economic activity refers to all the actions involved in producing, distributing and consuming goods and services; rising economic activity tends to be associated with rising standards of living.

There are many different measures that give information about economic activity. These are called **economic indicators**. They include:

- the economic growth rate
- the unemployment rate
- the **inflation rate**
- the Human Development Index
- the Better Life Index
- sustainability indexes.

Most indicators only measure a part of the economy. It is therefore very important to consider several different indicators when determining the overall state of the economy.

Economic growth rate

Gross Domestic Product (GDP) is the total market value of all final goods and services produced in an economy in a year. Final goods and services are those that are purchased by consumers, such as clothing and cars. GDP does not include items made by one company but then bought by another company to add to a final product, such as the tyres that come with a new car. This is necessary to avoid double counting, as the final value of the tyres is included in the overall final value of the car.

The percentage change in GDP from one year to the next is known as the economic growth rate; it is one of the most important indicators of economic performance. It can be measured in either nominal or real terms:

- Nominal GDP includes price changes. This means that if the amount produced in the economy and/or the price level rises, nominal GDP will rise.
- Real GDP has been statistically adjusted to remove the impact of price changes. If the actual amount of goods and services produced increases, real GDP will increase. Changes in the price level will have no effect, making real GDP a better measure of actual economic performance than nominal GDP.

The rate of economic growth tends to move in waves known as the business cycle; it goes through phases of rising and falling growth rates, as shown in Source 4.1.1. It may even experience recessions, during which the amount of goods and services produced falls each year and economic growth is negative. Australia's long-term average rate of real GDP growth is just over 3 per cent.

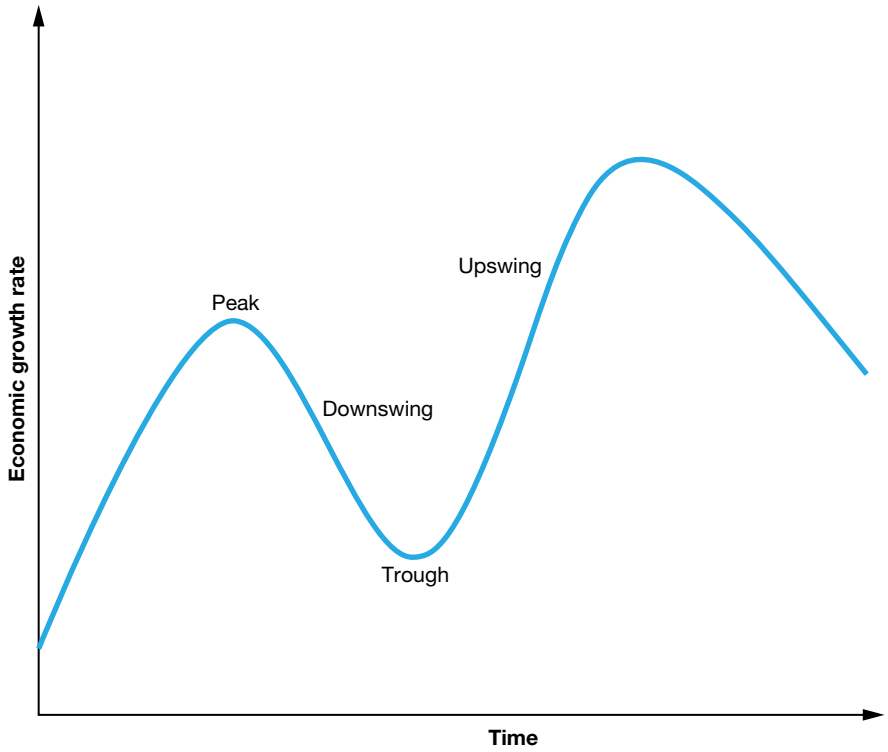
Unemployment rate

To be considered unemployed, a person must currently not have a job, be willing and able to work, and be actively seeking work. The unemployment rate tells us the proportion of the **labour force** that is currently unemployed. This means that people who are not available for work, such as full-time students and stay-at-home parents, are not included in the unemployment rate.

Unemployment will always exist in any **market economy**. For example, there will always be some people moving between jobs (called frictional unemployment) or experiencing changing economic circumstances such as finishing Year 12 and starting to look for work. As a result, economists estimate that the lowest unemployment rate Australia can achieve (known as the full employment rate) would be 4.5–5 per cent.

Inflation rate

The inflation rate measures the rate at which the general level of prices in a particular economy has risen over a year. This calculation is adjusted to reflect the buying patterns of the average household. For example, a 10 per cent rise in the price of electricity will have a much bigger impact on the overall inflation rate than a 10 per cent rise in the price of light bulbs.



Source 4.1.1 The four phases of the business cycle are the peak, downswing, trough and upswing. In reality, it can be difficult to determine which phase an economy is experiencing.

In Australia, the government target range of inflation is 2–3 per cent each year. While many consumers would probably be happy for prices to stop rising, a very low inflation rate would be bad for the economy because it would be very difficult for workers to obtain wage increases. This is because rising prices can give companies room to increase wages without lowering their profit. Inflation that is too high is also a problem as it can reduce the country's **international competitiveness** and reduce the purchasing power of people whose incomes rise at a slower rate than inflation. Exceptionally high rates of inflation are known as **hyperinflation** (see Source 4.1.2).

Broader measures of welfare

Economic growth, inflation and unemployment statistics give very useful information about economic performance. However, each indicator can be criticised for giving only part of the picture, as they do not consider changes in the standard of living. A country may be experiencing excellent performance with regards to economic growth, inflation and unemployment, but this does not necessarily mean that people in that country are better off or happier each year. There are a number of other indicators designed to measure the population's broader wellbeing.

Source 4.1.2 Hyperinflation in Germany between 1921 and 1924 meant that it was cheaper to burn money than to buy fuel.

Country	Human Development Index ranking	Better Life Index ranking (OECD countries only)	Environmental Performance Index ranking
Australia	2	1	13
Brazil	75	31	46
Japan	20	20	39
South Africa	116	na	81
United Kingdom	14	16	12
United States	8	7	26

Source 4.1.3 Each sustainability index focuses on different aspects of economic activity. Overall, Australia's sustainability performance is very strong. HDI, BLI and EPI data

Human Development Index

The Human Development Index (HDI) is calculated by the United Nations based on three key variables: expected lifespan, education and average income in each country, on a scale between zero and one. A higher HDI score suggests a higher standard of living. The HDI measures how effectively economic activity is being translated into real improvements in these aspects of the standard of living.

Better Life Index

The Organisation for Economic Co-operation and Development (OECD) calculates the Better Life Index by looking at 11 different measures of wellbeing. This includes GDP per person, as well as broader indicators such as job security, air quality and work–life balance. According to 2015 data, while the United States has the highest income per person of the OECD countries, they rank below the OECD average for work–life balance; South Korea has a very high average income and civic engagement, but life satisfaction is significantly below average.

Sustainability indexes

A number of private and public sector organisations have developed measures to compare the environmental sustainability of different countries (see Source 4.1.3). One example is the Environmental Performance Index (EPI) developed by Yale University and the World Economic Forum and calculated every two years. It considers health measures such as air quality and access to clean water, as well as environmental issues such as biodiversity and management of natural resources.

How Australia's economy is performing

From around 2000 to 2015, the Australian economy experienced a significant period of growth led by the mining industry. The only major interruption to this expansion was the **Global Financial Crisis** of 2007–08. This was a period of global economic instability that arose partly as a result of the collapse of a number of financial institutions in the United States.

Australia's recent mining boom was caused by significant increases in Chinese demand for Australian iron ore and coal exports; this rising demand led to large price increases that, in turn, led to mining companies expanding their output. Today, growth rates in China—both overall growth and growth in demand for steel, which is the major use of iron ore and coal—are slowing (see Source 4.1.4). This, together with increased world output of key commodities, has caused prices to fall and reduced mining companies' profits.

While mining continues to make a significant contribution to the Australian economy, it is no longer experiencing the spectacular growth rates

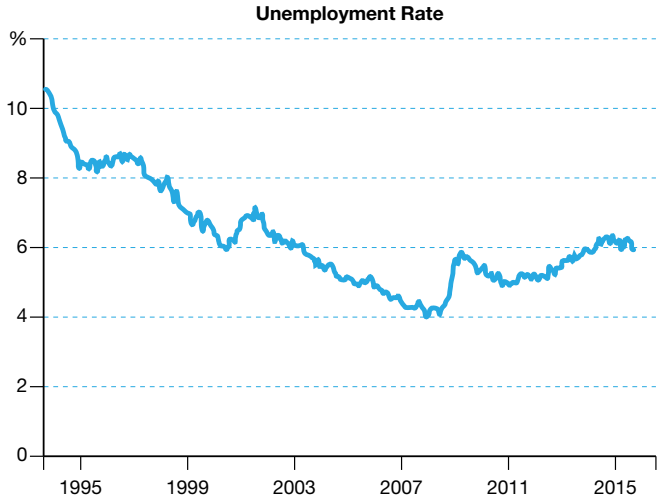
Year	Economic growth rate	Inflation rate
2011–12	3.6%	2.4%
2012–13	2.4%	2.3%
2013–14	2.5%	2.6%
2014–15	2.2%	1.7%

Source 4.1.4 As Australia's economic growth rate slowed in 2014–15, the inflation rate fell below the target. In order for Australia to return to higher growth rates, new jobs need to be created in non-mining industries. ABS Cat. No. 5206.0

seen at the height of the boom. Other industries such as tourism and healthcare are now expanding in response to changes in the broader social and economic climate.

As growth rates in China, Australia's largest trading partner, continue to slow, there are significant challenges ahead for the Australian economy. With growth below its average rate, inflation below its target and relatively high levels of unemployment, Australia is now entering a new phase in its economic development.

At the same time, Australia continues to score very highly on broader measures of the standard of living, such as the Human Development Index, and performs well in measures of environmental sustainability (see Source 4.1.6). Future voters, consumers and workers will need to make difficult decisions about the desired balance between economic growth, employment and a broader quality of life.



Source 4.1.5 Australia's unemployment rate fell significantly during the mining boom (interrupted by a rise during the Global Financial Crisis) and has since risen to hover around 6 per cent as the economy transitions away from mining. ABS Cat. No. 6202.0

Country	Human Development Index rank (2015)	Gross National Income per person (2015)
Norway	1	64 992
Australia	2	42 261
Switzerland	3	56 431
United States	8	52 947
Qatar	32	123 124

Source 4.1.6 A nation's Human Development Index ranking depends on a wide range of factors, not just income. While Australia's income per person is lower than the other countries listed here, high standards of healthcare and education are also taken into consideration. UN HDI Report 2015

ACTIVITIES

Remembering and understanding

1 Define the term 'economic activity'.
2 List at least four indicators of economic activity.
3 What is Australia's long-term average real GDP growth?
4 What does the inflation rate measure?

Applying and analysing

5 When determining the state of an economy, why is it important to consider several different economic indicators?
6 Examine why unemployment will always exist in any market economy.

Evaluating and creating

7 Create an information campaign to educate Australians about the state of the Australian economy since 2000.
8 Assess the importance of the mining industry to Australia's economy. Give supporting evidence with your conclusion.

Economic performance and living standards

Standard of living

Economists define the standard of living as the level of material comfort that people in a particular community are able to achieve. This is very difficult to measure: it includes the amount of goods and services a person can buy, but also a range of less tangible items such as life expectancy, access to education and water quality. If economic growth and other measures of economic performance improve, this should result in an improvement in living standards.

If an economy is producing more, the people in that economy should be earning higher incomes and be able to consume more goods and services. With higher incomes, they might be more likely to invest in measures to improve the environment, or could choose to work shorter hours; these choices would also enhance living standards.

Over time, living standards as measured by the United Nations Human Development Index have improved significantly. However, large differences remain between various countries and regions, with average living standards in sub-Saharan Africa significantly lower than those in Europe.

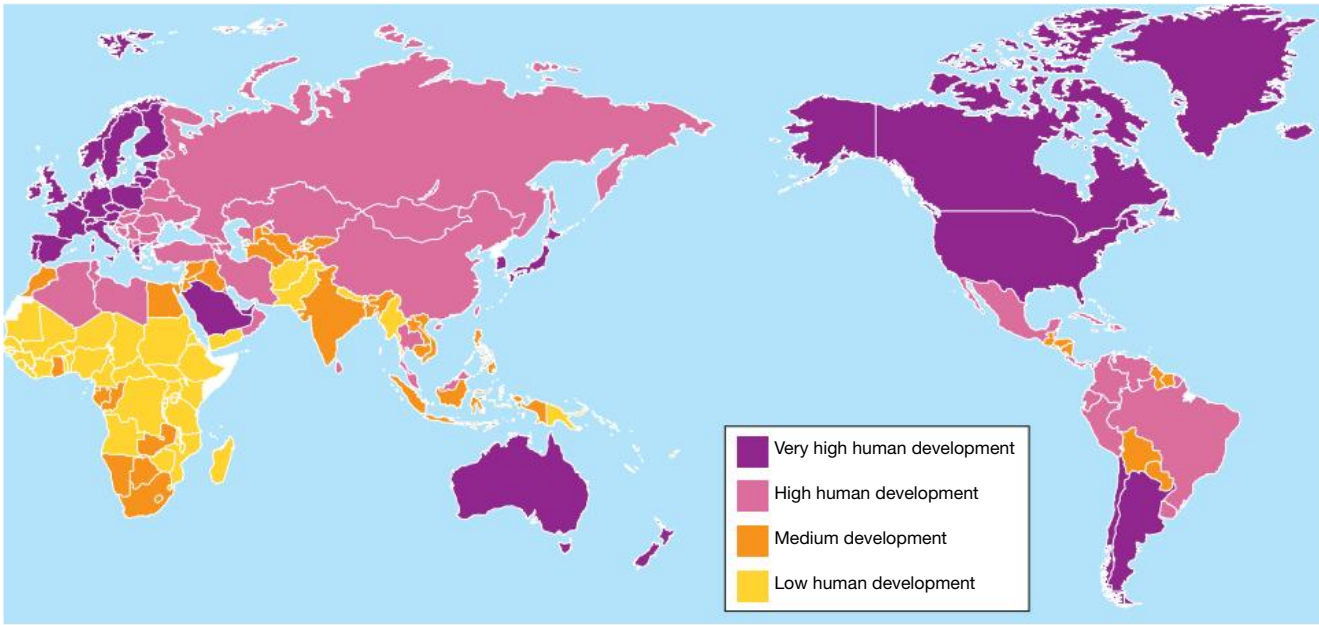
Causes of differences in living standards

Living standards vary considerably around the world. Most of these differences are the result of differences in:

- productivity
- employment patterns
- foreign investment
- debt levels
- other factors including geography and natural resource endowments.

Productivity

A worker's productivity is the amount they can produce in a particular period of time. Improvements in productivity are key to raising living standards. If people are able to produce more in the same amount of time, then the GDP per person will rise and on average the standard of living will rise. Productivity may rise if workers become more skilled as a result of further education or training, or if new production methods are found which allow existing resources to be used more effectively.



Source 4.2.1 While living standards worldwide have improved significantly, large differences still remain. In particular, the average living standard in central Africa remains at a low level. UN Human Development Report 2015

Access to technology is an important factor influencing productivity. Higher levels of technology are usually associated with higher levels of productivity as workers are able to complete tasks more quickly or to a higher standard.

Employment patterns

The **participation rate** is the proportion of people of working age who are in the labour force. Higher participation rates tend to be associated with higher standards of living as a greater proportion of people are earning an income and can therefore access a wider range of goods and services.

Several economies, including Australia, face the challenge of ageing populations. In Australia's case, this is largely the result of rising life expectancy and falling birth rates. Australia's participation rate is expected to fall from about 65 to 60 per cent from 2015 to 2060. To maintain the current standard of living, productivity will need to rise to compensate for the lower participation rate. Japan faces particularly difficult obstacles as the population ages: by 2035, 20 per cent of Japan's population is expected to be aged 75 or more.

Within an economy, there may be significant differences in the standard of living as a result of the extent of employment opportunities available in different areas. From 2012 to 2014, the unemployment rate in Western Australia was lower than the national figure (see Source 4.2.2), reflecting the considerable job opportunities that arose at the height of investment in mining. In 2015, relative declines in the strength of the Western Australian economy and growth in other states such as New South Wales meant that job opportunities started to shift away from WA. As a result, unemployment rose in WA and many ex-mining employees saw considerable reductions in their standard of living.

Foreign investment

Historically, a major driver of improvements in Australia's standard of living has been foreign investment, which can be defined as inflows of money from overseas. A common form of foreign investment is a multinational company setting up a new subsidiary in Australia, such as Aldi opening supermarkets in Western Australia. This leads to new jobs being created in Australia and therefore higher incomes and higher productive capacity. Often, foreign investment involves the overseas investor bringing new technology into Australia, resulting in more efficient production. Foreign investment from overseas can also help Australian businesses expand more quickly than would otherwise be possible as it gives them access to loans from overseas banks, which may charge lower interest rates than Australian banks.

Some economies are far more attractive to foreign investors than others. If foreign investors are concerned that they may be heavily taxed, that their operation may be taken over by the government, or about high levels of corruption and political instability, they will be far less likely to invest than in an economy that is based on a fair, transparent and well-managed legal system. The World Bank releases figures each year on the ease of doing business in various countries. Countries are ranked, with number one being the easiest country to do business in. Australia scores relatively highly on this measure, demonstrating that it is a very attractive destination for foreign investment (see Source 4.2.3).

Debt levels

A significant contributor to differing standards of living within a particular economy is the amount of debt held by households. If a household has high levels of debt, perhaps as a result of a large mortgage or overdependence on credit cards, they will need to spend a larger proportion of their income on paying off the money owed than another household with low

Month	Unemployment rate — Australia	Unemployment rate — Western Australia	Unemployment rate — New South Wales
January 2013	5.4%	4.4%	5.2%
January 2014	5.9%	4.9%	5.6%
January 2015	6.2%	5.6%	6.1%
January 2016	5.8%	6.2%	5.2%

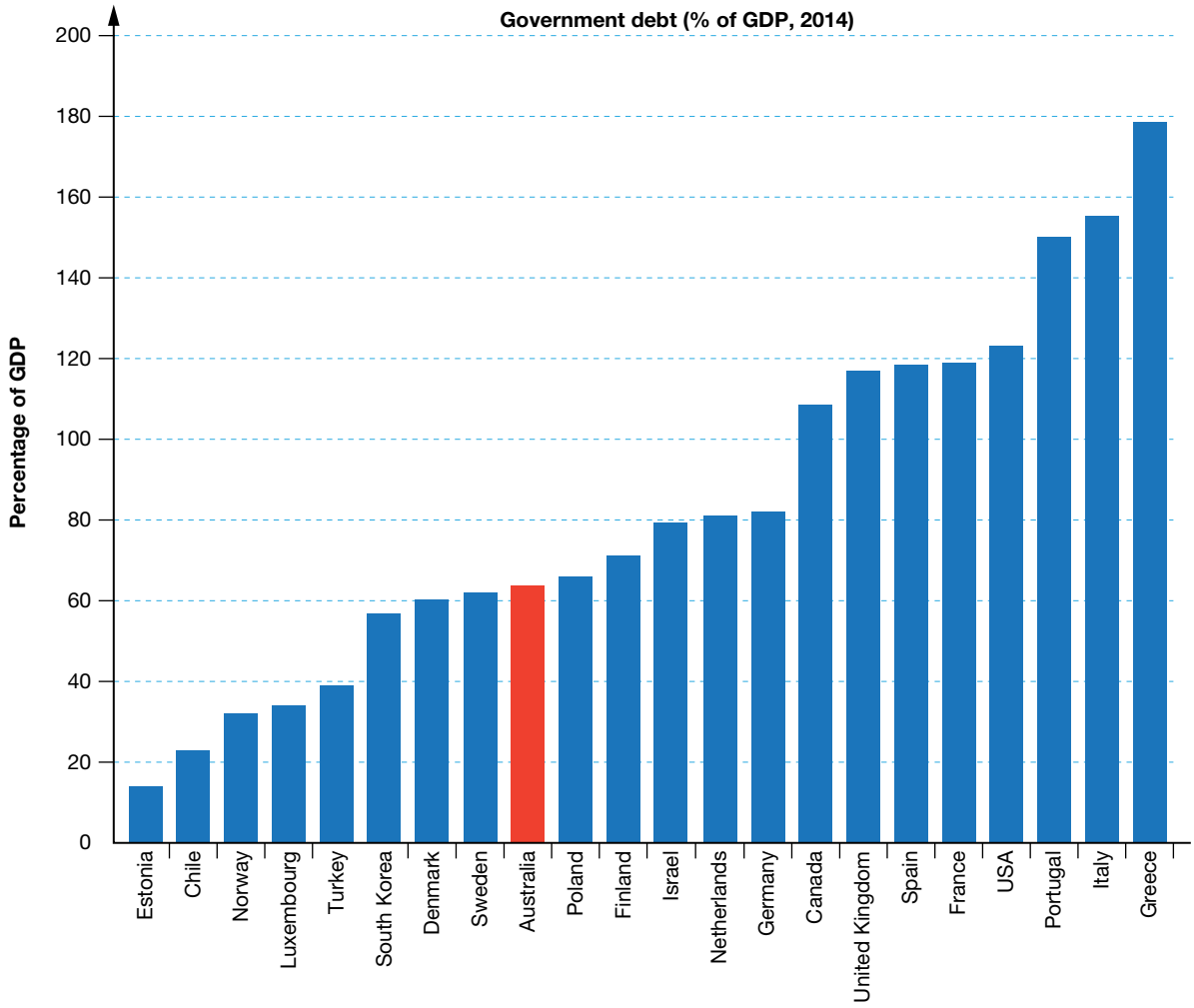
Source 4.2.2 Changing patterns of economic activity in Western Australia and New South Wales have led to changing standards of living. ABS Cat. No. 6202.0

Country	Ease of doing business rank
Singapore	1
New Zealand	2
United Kingdom	6
United States	7
Australia	13
Canada	14
Germany	15
Switzerland	26
Russian Federation	51

Source 4.2.3 Australia scores relatively highly on the overall ease of doing business index. However, the time taken to connect new businesses to electricity, costs associated with international trade to and from Australia, and the complexity of the tax system create difficulties for businesses in Australia. World Bank Group's 2016 Doing Business Index

debt. Buying items on credit allows the household to gain the benefits of consuming those items now, but eventually they will need to be paid for; a decision must therefore be made about whether the benefit of getting the item now outweighs the additional interest cost incurred as a result of credit arrangements.

Governments also need to borrow money at times and government debt can affect standards of living between countries. If a nation's government has a high level of debt, a greater proportion of taxes paid by residents of that country will need to be spent on debt servicing rather than on things such as healthcare, police and education. High government debt may also make it more difficult for the government to manage downswings in the level of economic activity: many governments borrow money during downswings to increase overall demand and support employment. However, this may not be feasible if the government is already carrying significant debt.



Source 4.2.4 In comparison with other countries at a similar level of economic development, Australia's level of government debt is fairly moderate. OECD data

Australia's government debt in relation to GDP is at a manageable level (64 per cent in 2014), as shown in Source 4.2.4. However, as the population ages and workforce participation falls, government spending is likely to rise considerably while income falls. To maintain current living standards, major changes in overall patterns of government spending and taxation may be needed.

Other factors

Differences in geography also contribute to differences in living standards. Singapore occupies a land area of just over 719 square kilometres, but has a GDP per capita of US$55 000 and ranks 11 on the Human Development Index. Singapore's wealth is largely a product of its geographic location: its proximity to the Strait of Malacca and surrounding nations has allowed many Singaporean companies to base their operations on importing a range of manufactured goods then exporting them at a profit.

Climate and natural resource endowments can play a role in determining national and regional living standards. For example, the cold harsh climate of Siberia in north-eastern Russia means that the agricultural season is very short, so historically the standard of living was very low. However, discoveries of substantial mineral deposits including nickel, zinc, oil and gas have transformed both the local economy and that of Russia as a whole.

As climate patterns shift, many countries will experience changes in their standard of living. In particular, previously highly productive agricultural regions may find their output declining as rising temperatures and lower rainfall affect both crops and livestock. Maintaining, and hopefully raising, living standards in the future will require creative approaches to both long-standing concerns such as access to education, but also to newer issues such as climate change and natural resource depletion.

ACTIVITIES

Remembering and understanding

1 How do economists define the 'standard of living'?
2 What is the link between access to technology and productivity?
3 Which organisation releases the ease of doing business index?
4 What is one effect of a government having a high level of debt?

Applying and analysing

5 Using a map of the world, create a visual to show which economies are assessed as being easy to do business in for foreign investors and why.

Evaluating and creating

6 Judge which of the causes of the differences in living standards would have the most impact on living standards. Give reasons for your answer.
7 Evaluate the significance of the challenge to the Australian economy of its ageing population.
8 Assess the significance on living standards of the factors listed in the section 'other factors'.

UNIT 4.3

Income and wealth

Differences between income and wealth

The terms **income** and **wealth** are closely related but different concepts. Income refers to the money that an individual receives in exchange for working or making other resources available for productive purposes. Wages and salaries are the most common forms of income, but also includes payments such as money earned from renting out investment properties, dividends paid from shares or interest on bank deposits.

Wealth refers to the value of all the assets owned by an individual that have the ability to earn an income in the future. This includes savings, property, shares and other investments. A better measure of how 'well-off' an individual is can be obtained from the concept of **net wealth**, which is total wealth minus any debts owed by the individual.

Measuring the distribution of income

The **distribution of income** refers to the way a nation's total income is spread between households. If all households earned exactly the same income, the distribution of income could be described as perfectly equal. In reality, different individuals and households have different skills, interests and abilities, meaning they have different earning potential.

Economists use the **Gini coefficient** to measure the extent of inequality in the distribution of income. The Gini coefficient can range from zero to 100: zero indicates perfect equality where every household earns exactly the same income; 100 indicates absolute inequality where one household earns the nation's entire income. Australia's Gini coefficient is around 33, which is comparable to that of other nations with similar economies, such as the United Kingdom, as shown in Source 4.3.1.

Gini coefficients for selected countries (2013)	
Country	**Gini coefficient**
Sweden	25.0
Norway	25.8
Australia	33.3
United Kingdom	36.0
United States	40.8
Qatar	41.1
Malaysia	46.2
Brazil	54.7
Zambia	57.5
Namibia	63.9

Source 4.3.1 Gini coefficients for less developed countries tend to be higher than for industrialised nations, reflecting factors including access to education and the variety of job opportunities available. HDR Report 2015 and ABS Cat. No. 6523.0

Reasons for differences in the distribution of income

Differences in distribution of income reflect many complex factors including:

- patterns of workforce participation
- access to education
- government policies on the redistribution of income
- national economic growth and development.

When considering a particular country's income distribution, it is important to look at how these factors work together to create differences in income. For example, it is possible for a country with a high rate of economic growth to still experience significant income inequality if education and workforce participation are highly unequal.

Patterns of workforce participation

Countries where a larger proportion of the working-age population are involved in paid work will generally have lower Gini coefficients than countries where fewer working-age people are employed. Women's workforce participation is a key element. In many countries such as Niger and Afghanistan, girls and

women have less access to education than their male counterparts, reducing the extent of job opportunities available to them. It may also be culturally taboo for a woman to work outside the home.

In addition, it can be difficult for women in some countries to access finance. According to research by the World Bank, women in developing economies are 20 per cent less likely than men to have an account at a formal financial institution. Even if women do have an account, there may be additional restrictions on how it is used. In Pakistan, for example, while a woman may be able to open her own account, a male relative often has the final decision-making authority about how the money is used. This creates a barrier to women forming new businesses or investing in education, which reduces the extent of women's participation in the workforce.

Access to education

Countries with lower average education levels tend to have higher Gini coefficients. This is because in many industries, education is proportional to skill levels. Those with a higher level of education tend to be more highly skilled and can therefore earn higher wages. Education levels vary widely between countries. Even within the Organisation for Economic Co-operation and Development (OECD), a group of developed nations including Australia, the average number of years of education varies from 14.4 years in Mexico to nearly 20 years in Ireland. Australia is highly competitive in this area, at 19.4 years. Around 80 per cent of children in OECD countries will receive some form of tertiary education; in sub-Saharan Africa, the figure is around 6 per cent.

Source 4.3.2 Access to education is a key factor behind high-income inequality in many African countries. Around one in three children don't attend school; more than half of those not in school are girls.

Government policies on income redistribution

In many countries, governments actively work to reduce the extent of income inequality. This can occur through taxation systems that are designed so that higher income earners pay higher rates of tax than lower earners, and the money is then used to provide a range of income support payments. In addition, governments often provide basic services such as healthcare and education to ensure that all citizens have access to an acceptable standard of living. The degree to which governments engage in income redistribution varies considerably from country to country. A rough estimate of this can be provided by data comparing total government spending as a proportion of GDP by country.

Country	Government spending as a proportion of GDP (2013)
Slovenia	59.7%
Finland	57.8%
Sweden	53.3%
United Kingdom	45.5%
Japan	42.3%
Canada	40.7%
United States	38.7%
Australia	36.6%
South Korea	31.8%
India	27.0%
Indonesia	19.1%

Source 4.3.3 Government spending as a proportion of GDP varies significantly from country to country. While government spending is a relatively low proportion of Australia's GDP, other characteristics of the Australian economy have helped produce a relatively low Gini coefficient. OECD *Government at a Glance 2015*

Economic growth and development

Higher rates of economic growth help create new jobs, while also raising additional government revenue through taxation that can be used to improve education levels. For both of these reasons, countries that are experiencing higher rates of economic growth will tend to experience falling income inequality. More developed countries also tend to have lower rates of income inequality as they usually offer highly diversified job opportunities, allowing people with a wide range of skills to find employment.

Impact of income inequality

A certain level of income inequality is often regarded as an economic positive as it provides an incentive for people to engage in productive economic activity and take risks in the hope of achieving rewards. However, too much inequality can contribute to a range of social and economic problems.

Countries with higher Gini coefficients tend to achieve lower growth rates than countries with more equitable income distributions. This occurs because countries with significant income inequality are unlikely to employ the full potential of their workforce as large numbers are disadvantaged by lower education levels or social restrictions. In addition, gender gaps in the workforce can reduce the ability of employers to obtain the workers and skills they require.

If a country has a high degree of inequality, there is a risk that political influence will be concentrated in the hands of the minority of the population with access to sufficient funds to pressure governments. This can result in economic and social privileges becoming increasingly targeted towards those who are relatively wealthy.

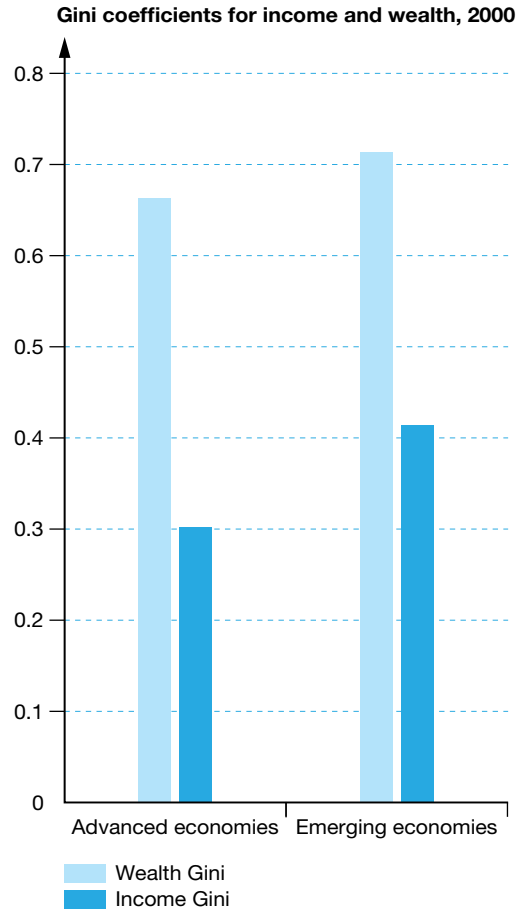
The poverty trap

One of the reasons why income inequality is a significant concern relates to the poverty trap. This refers to the social or economic systems that make it very difficult for poor people to raise their standard of living. For example, children from families experiencing poverty may not be able to focus on their education to the same extent as children whose families earn even slightly higher incomes. Hunger, stress from ongoing difficult decisions, poorer health and the need to get a job as early as possible may all make it harder to achieve educational outcomes which can help create new opportunities in life.

Recent trends in the distribution of income

Gini coefficients can be calculated for both income and wealth. In both advanced and emerging economies, Gini coefficients for wealth are significantly larger than for income. This will tend to lead to greater income inequality in the future as wealthier households accumulate assets much faster than poorer ones, further raising their ability to earn income.

Many countries, including Australia and the United States, have experienced a rise in income inequality since the 1990s. This is largely due to increasing differences in the amount of income households earn from sources other than paid employment. As some households accumulate greater wealth, this raises their income from sources such as rent and interest. The current increase in income inequality is therefore closely linked to wealth inequality as shown in Source 4.3.4.



Source 4.3.4 Wealth inequality leads to rising income inequality as wealthier households have access to many types of income, not just wages and salaries. IMF, *Causes and Consequences of Income Inequality: A Global Perspective, 2015*

Much of the recent research by economists on the distribution of income and wealth focuses on the role played by opportunities. While some inequality is always going to be present and can even be desirable, the key for policymakers is to ensure that, as far as possible, opportunities are available to all. This includes opportunities for education, access to finance and a flexible social system that allows people to accumulate reasonable rewards for their efforts.

Source 4.3.5 In Jakarta, a commuter train passes between a shanty town and a business district, highlighting the income inequality in Indonesia.

ACTIVITIES

Remembering and understanding

1 What does the term 'distribution of income' refer to?
2 Give one reason why differences in the distribution of income exist.
3 What are two ways governments actively work to reduce the extent of income equality?
4 State one impact of income inequality.

Applying and analysing

5 Use a mind map to dissect how the Gini coefficient works.
6 Analyse why a certain level of income inequality is often regarded as an economic positive.
7 Explore recent trends in the distribution of income and build a more complete picture of these trends.

Evaluating and creating

8 Investigate the poverty trap. Argue for or against the proposition that it doesn't exist in Australia.

UNIT 4.4

Managing the economy

Economic roles of the government

Government spending contributes approximately 25 per cent of Australia's GDP, indicating that the government plays a significant role in the operation of the economy. The central aim of this is to raise living standards, both now and in the future. There are four main methods that the government uses to achieve this aim:

- providing goods and services
- regulating business activity
- redistributing income
- macroeconomic management.

Providing goods and services

Governments are involved in providing key goods and services that contribute to the nation's standard of living. Some items offer little or no profit for the private sector and will therefore only be produced by the government. Lighthouses are examples of public goods: there is no effective way to ensure that their light is only available to ships that have paid for the service (see Source 4.4.1). These items contribute to the country's overall wellbeing, but will be produced only by the government sector due to the lack of a profit incentive.

The government is also involved in supplying things that provide positive externalities, such as improved productivity and wellbeing, which are benefits to society beyond those experienced by the people consuming the item. Education and healthcare are examples of these: they can be provided by the private sector at a profit, but the government supplements their supply in an attempt to ensure that all citizens can access these essential items.

Regulating business activity

In their quest for profit, businesses may sometimes act in ways that do not promote the national interest. As a result, governments regulate the activities of businesses in order to achieve a range of economic, environmental and social goals. A major area of regulation is the management of negative externalities, which are adverse effects of economic activity that are experienced by people who were not directly involved in the production or consumption of the goods involved. For example, the government regulates the amount of pollution that can be emitted by factories in order to protect the health of local residents and the environment. Environmental safeguards promote living standards by helping to ensure that everyone can access essential clean air and water.

Governments also regulate the activities of companies in order to protect consumers and businesses. For example, it is illegal for competing firms to work together to set prices as this may result in consumers being charged unreasonably high prices.

Source 4.4.1 The lighthouse at Cape Leeuwin, near Augusta, WA is an example of a public good. It is operated by the Australian Maritime Safety Authority.

Redistributing income

If the government played no role in the economy, the income received by any individual would be entirely determined by the contribution they could make to productive economic activity. In reality, some people have very rare skills such as the ability to perform brain surgery, while others have limited or no ability to work as a result of illness or disability. Without any action by governments, this would lead to considerable differences in income and wealth.

AUSTRALIA'S TAXATION SYSTEM

In many countries, including Australia, voters have empowered governments to assist those with limited earning capacity. This includes requiring high-income earners to pay higher taxes than low earners. Taxes are payments that must be made to the government by individuals or companies. Individuals pay income tax based on the amount of income they earn; companies pay company tax based on the amount of profit they make. The Goods and Services Tax, or GST, is a type of sales or consumption tax charged when consumers buy most goods and services. The GST is collected by retailers and service providers, who must then forward it to the government. The government uses some the money raised from taxation to provide a range of welfare payments such as the age pension, Job Search Allowance and Disability Support Pension. These payments aim to raise the standard of living of those who have limited ability to earn an income.

A tax is described as progressive if its rate increases as income increases. In Australia, income tax is highly progressive, as shown in Source 4.4.2. However, some other taxes including the GST are described as regressive. This means that as the taxpayer's income rises, they pay a lower proportion of it as tax.

Taxable income	Tax on this income
0–$18 200	Nil
$18 201–$37 000	19c for each $1 over $18 200
$37 001–$80 000	$3572 plus 32.5c for each $1 over $37 000
$80 001–$180 000	$17 547 plus 37c for each $1 over $80 000
$180 001 and over	$54 547 plus 45c for each $1 over $180 000

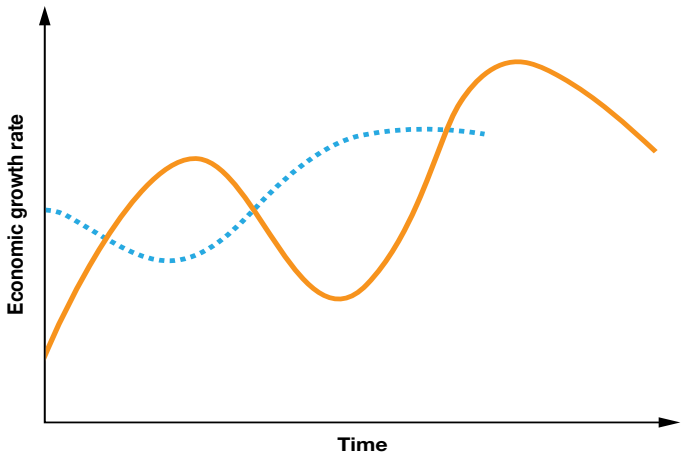
Source 4.4.2 Australia's income tax rates for the 2015–16 financial year demonstrate that income tax is progressive. Australian Tax Office

Governments need to charge some regressive taxes in order to ensure that the overall tax base is not overly dependent on any particular source; otherwise, if the level of economic activity falls, the government may find that it is receiving less tax revenue than normal and may not have enough money to pay for its spending programs.

Macroeconomic management

In order to sustain living standards, governments are involved in directly managing the level of economic activity through fiscal policy. This refers to the process of setting government spending and taxation levels to support long-term economic growth. During the boom phase of the business cycle inflation tends to rise as more money enters the economy, so governments will tend to increase taxation and decrease spending to help reduce the level of economic activity as high inflation can result in lower standards of living. In a trough, governments will try to raise economic activity and create new jobs by reducing taxation and raising spending, often by borrowing money. This is sometimes described as **counter-cyclical policy**, meaning that the government tries to counteract the extremes of the business cycle (see Source 4.4.3).

The federal government's largest source of income is individual income tax, although company taxes and sales taxes are also significant (see Source 4.4.4). The single largest area of spending is social security and welfare, reflecting the government's involvement in redistributing income. Health, defence and education are also significant areas of expenditure.

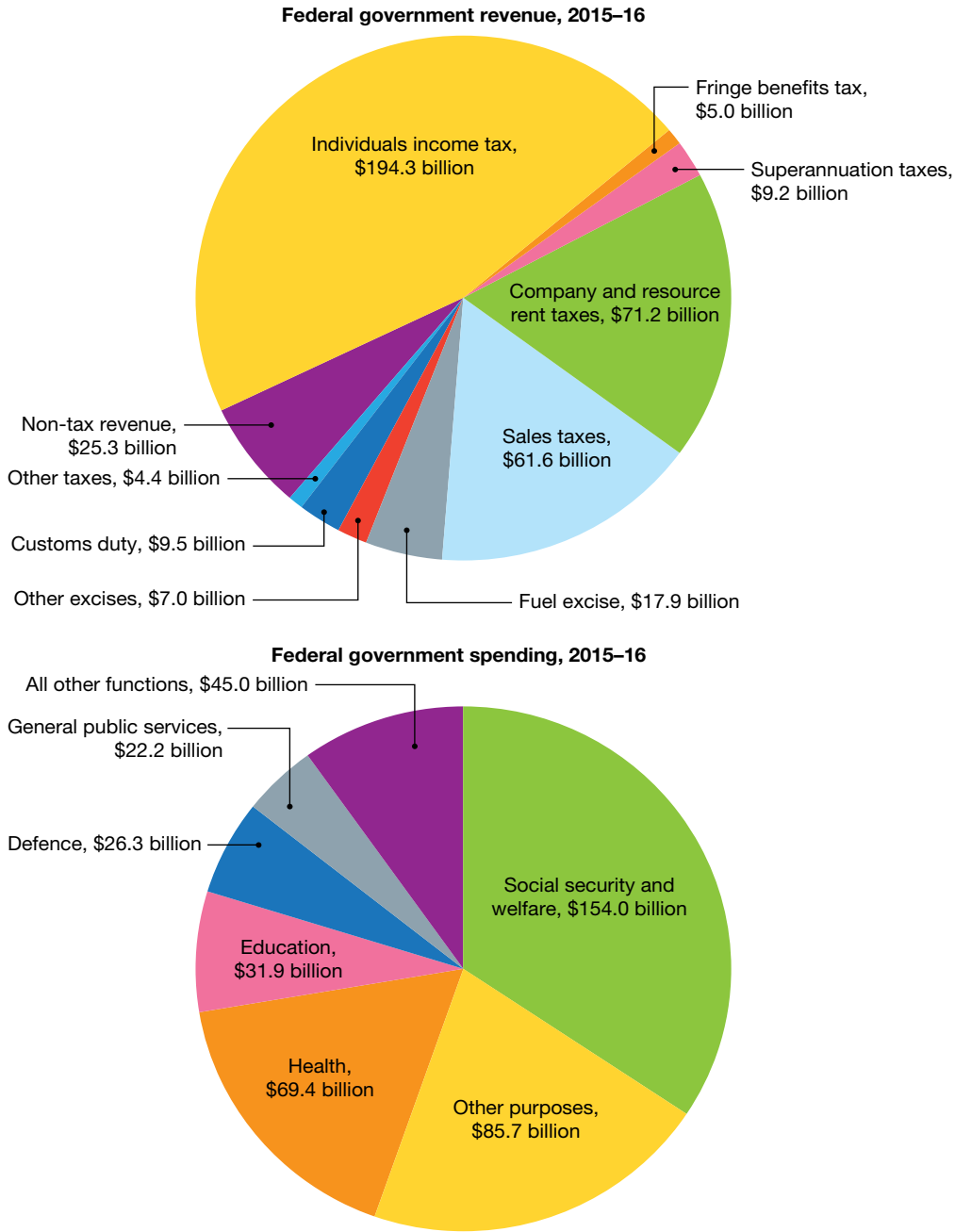


Source 4.4.3 The orange line demonstrates the business cycle without government involvement. Successfully implementing counter-cyclical policies will mean that the economy follows the dashed blue path, avoiding both the high inflation that is associated with the peak phase and the high unemployment experienced in the trough.

MONETARY POLICY

Monetary policy refers to the Reserve Bank of Australia's adjustment of the cash rate in order to influence the level of economic activity. The cash rate is the fundamental interest rate paid on money loaned. If the cash rate rises, interest rates will rise and total spending will fall as it becomes more expensive to borrow money or pay off existing loans. Conversely, it encourages people to save money as they can earn higher interest on savings in the bank. When the cash rate falls, interest rates fall and spending rises as it is cheaper to borrow money or pay off existing loans, and money in savings accounts earns little interest.

Even though the Reserve Bank rather than the federal government sets monetary policy, it is still considered part of the overall management of the economy as the Reserve Bank is regarded as a part of the government.



Source 4.4.4 In 2015–16, the government expected to receive $405.4 billion in revenue, mostly from income tax. Total spending was expected to be $434.5 billion, with social security and welfare being the largest area of expense. The difference in these figures can be regarded as debt. Based on Commonweath of Australia data

PRODUCTIVITY POLICY

Another element of the government's management of the economy is productivity policy. Productivity refers to the amount of output produced by each input into the production process. If productivity rises, this means that a particular company is able to make more output from the same amount of inputs. Governments aim to raise the economy's productivity as this allows the economy to raise GDP per capita without needing to employ additional resources; as a result, the standard of living should rise.

In Australia, productivity policy has included measures to encourage businesses to invest in research and development processes, and strategies to improve education, training and the efficiency of the taxation system. While these policies were less prominent than fiscal and monetary policy in the early years of the 21st century, it is likely that the challenges of Australia's ageing population and the need to maintain international competitiveness will encourage governments to seek further ways to raise the economy's efficiency.

TRAINING AND WORKFORCE DEVELOPMENT POLICY

Sustaining, and improving, standards of living in the future will require ongoing efforts to develop the skills of those in the workforce. Governments are involved in developing policies to support the education of all residents, from early childcare through to vocational and higher education and training. At present, significant investments are being made in promoting and supporting science, mathematics and related areas as these are expanding industries that are expected to help support Australians' future standard of living.

Raising the participation rate is another strategy to help promote standards of living. By contributing towards the cost of childcare, the government can make it easier for parents of young children to return to, or enter, the workforce. Changes to government payments over time have also aimed to increase the participation rate. For example, until July 2014, a taxpayer whose spouse was entirely financially dependent on them would receive a discount on their total income tax. Removing this tax offset provided an incentive to dependent spouses to enter the labour force.

MIGRATION POLICY

Australian companies sometimes have difficulty finding employees who have appropriate skills. To support the continued growth of these companies, the government has a skilled migration policy. This policy encourages workers with appropriate skills and experience overseas to migrate to Australia. For example, significant numbers of overseas-trained doctors have been recruited to fill vacancies in rural and regional hospitals. Sometimes, migrants need to complete additional certification in Australia in order to ensure that their training meets Australian standards. Skilled migration can help fill skill gaps in Australia, promoting the growth of Australian companies while also providing Australians with an opportunity to learn new skills from those trained overseas.

ACTIVITIES

Remembering and understanding

1 List the government's four main methods of raising living standards.
2 Explain the difference between a tax described as progressive and a tax described as regressive.
3 Which organisation sets monetary policy in Australia?
4 What does the Australian Government's skilled migration policy encourage?

Applying and analysing

5 Construct a flow chart to demonstrate the impact of the Reserve Bank of Australia's adjustment of the cash rate.

Evaluating and creating

6 Develop criteria to help determine if services the government supplies are positive externalities.
7 Discuss the statement that the government should not regulate the activities of businesses. Do you agree?
8 Research the four main methods the government uses to raise living standards, and predict which method may be most important in the next ten years.

Inquiry tasks

Target ranges

Identify the target ranges set by the Australian Government for the following economic indicators:

- unemployment
- inflation
- economic growth.

Begin this task by applying a skim and scan technique to help you identify the information presented in this chapter in relation to target ranges. Next, analyse relevant websites (such as those of government departments or the Reserve Bank of Australia) to ensure that you have identified all of the target ranges. Conclude by examining the reasons given for setting the targets at these particular levels. Present your findings as an analytical report, with sub-headings relating to each economic indicator.

Changing targets

Experiment with the idea of using different target ranges for the economic indicators. What would happen if the agreed limits for unemployment, inflation and/or economic growth were changed? Question the potential costs and benefits of moving the target range either higher or lower for each of the economic indicators. You might spend some time analysing the ranges that are used in other OECD nations. Demonstrate your ideas in a SWOT analysis that considers the strengths, weaknesses, opportunities and threats of altering each of the targets either higher or lower.

Source 4.5.1 Managing the economy is about limiting unemployment, controlling inflation and creating opportunities for economic growth, while endeavouring to make positive changes to peoples' financial wellbeing.

Taxing times

Appraise the merits of a progressive taxation system by considering its advantages and disadvantages, not only for individuals and businesses, but for society as a whole. Look back over this chapter and identify the tax rates that are applied to individual incomes in Australia. Extend your evaluation by investigating the tax rates that are applied in other OECD nations.

Some Australians say that personal income tax rates in Australia are too high. Based on your research, can these claims be supported in any way? There are some nations that have experimented with a flat rate of taxation. Find out which countries these are and consider whether there is any justification for the use of a flat rate taxation system in Australia.

Taking financial control

Construct an expenditure pie chart for the Australian Government that illustrates the spending priorities that you would have if you were managing the national economy. Begin by referring back to Source 4.4.4 in this chapter. According to the source, in 2015–16 the Australian Government spent $434.5 billion. Use the information provided in the source to calculate the percentage of the budget that was spent on each of the following areas:

- defence
- education
- health
- social security and welfare
- general public services
- all other functions
- other purposes.

Now redraw the pie chart in accordance with how you would spend the same amount of money. Would you prioritise spending in the same areas, or choose different ones? Give reasons for your answer.

GLOSSARY

distribution of income the way a nation's total income is spread between households

economic activity all the actions involved in producing, distributing and consuming goods and services

economic indicators measures that give information about economic activity

Gini coefficient a measurement of the extent of inequality in the distribution of income

Global Financial Crisis a period of global economic instability in 2007–08, which arose partly as a result of the collapse of a number of financial institutions in the US

Gross Domestic Product (GDP) the total market value of all final goods and services produced in an economy in a year

hyperinflation very high rates of inflation

income the money that a person receives in exchange for working or making other resources available for productive purposes. Wages and salaries are the most common forms of income, but it also includes earnings from leasing investment properties or interest on bank deposits

inflation rate the rate at which the general level of prices in an economy has risen over a year

international competitiveness the measure of an economy's competitiveness to sell goods and services on the international market

labour force the members of an economy who are employed plus those who are seeking employment

market economy the economic system that coordinates the production and distribution of goods and services through market activity (with limited government intervention)

net wealth total wealth minus any debts owed

participation rate the proportion of people of working age who are in the labour force

standard of living the level of material comfort that people in a community are able to achieve

wealth the value of all the assets owned by an individual that have the ability to earn an income in the future, including savings, property, shares and other investments


NEW YORK AVENUE
PRICE $200
KENTUCKY AVENUE
FREE
PARKING
PRICE $180
TITLE DEED
ORIENTAL AVE.
RENT $6.
With 1 House

CHAPTER

5

Making financial decisions

Both households and businesses have to make a range of decisions about the best way to use their limited money. Sometimes, these decisions can have very long-term implications, such as a household taking out a mortgage, or a company buying out a competitor. All these decisions involve an element of risk, so we need to understand the key factors that can help guide these choices.

Source 5.0.1 The game Monopoly reflects some of the financial challenges people face in life. Each decision has its own risks and potential rewards.

UNIT 5.1

Factors influencing consumer decisions

Consumer choices

Consumers take many different factors into consideration when they are making decisions about which goods and services to purchase. These include:

- price
- **marketing** of products
- the availability and cost of finance
- the consumer's own preferences
- convenience
- ethical and environmental considerations.

Depending on the consumer and the type of item they are evaluating, some factors will be more important than others. For example, price and financial considerations will be far more critical when purchasing very expensive items, such as a house or car, than very cheap ones, while some consumers care more than others about environmental concerns.

Price

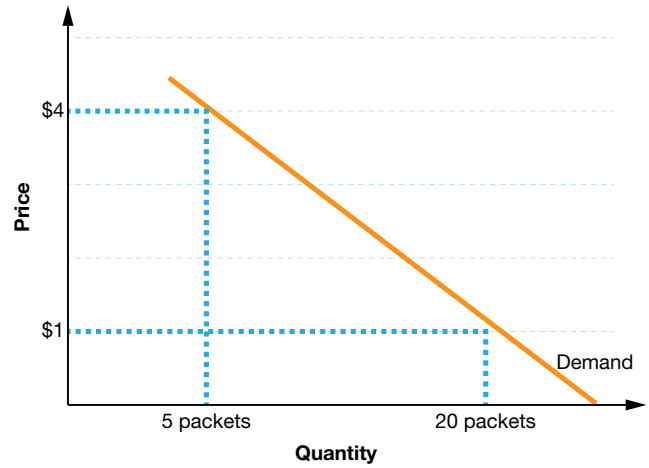
The price of an item is usually one of the most important factors consumers take into consideration when deciding what to buy. According to the **law of demand**, as the price of an item rises, the demand for it will fall. This is the result of two factors: the **income effect** and the **substitution effect**.

INCOME EFFECT

Suppose that the price of chocolate rises. If consumers' incomes remain the same, they won't be able to afford as much chocolate as previously and therefore the amount of chocolate they demand will fall. The reverse also applies: if the price of chocolate falls while consumer incomes remain the same, consumers will be able to afford more chocolate and so the demand for it will rise.

SUBSTITUTION EFFECT

Suppose once again that the price of chocolate rises. Chocolate has become relatively more expensive than biscuits, causing the demand for chocolate to fall as consumers switch to biscuits. This effect also applies in reverse: if chocolate prices fall, this means that chocolate becomes cheaper relative to biscuits and consumers will switch from biscuits to chocolate.



Source 5.1.1 Economists use demand curves like this one to show the inverse relationship between the price of an item and the amount that consumers demand.

EFFECTS OF PRICE CHANGES

Price changes may be temporary, such as a special offer that is valid for a limited time, or longer lasting arrangements such as 'price drop' agreements negotiated between supermarkets and their suppliers. Temporary specials can have several different aims. The company may want to sell their stock rapidly to make room for new items, or the special price could be designed to encourage new customers to try the product in the hope they will continue to buy it once the price rises. Companies may use a very low-priced item to entice consumers into their shops, in the hope that once they are there they will buy other, more profitable, items. In extreme cases, companies might be willing to set the price of an item below the cost of producing it. This means that the company will be losing money each time they sell the item, and usually the very low price can only be maintained for a short time.

By negotiating lower costs with suppliers, businesses can continue charging relatively low prices for long periods of time. This strategy aims to bring about long-term changes in consumer behaviour, either by encouraging consumers to buy a certain product or giving them a clear reason to continue to shop at that store.

Eventually, prices for most items will rise as businesses have to pay rising costs such as transport, electricity and wages. The law of demand states that higher prices will cause demand to fall; as a result, companies need to ensure that the marketing of their product will help support demand even when prices rise.

Marketing

Marketing is the entire process by which products are promoted and sold. This includes advertising campaigns such as online, television, newspaper and billboard promotions, but also all the other measures companies take to gain and retain customers.

An effective advertising campaign will result in significant increases in the demand for a product as it raises consumers' awareness of the product or brand, and perhaps of the benefits it offers. Essentially, advertising aims to change consumers' attitudes towards a product by encouraging them to view the item as something they need, rather than something they want.

Customer service is another element of marketing. Consumers may be influenced by a company's reputation for providing assistance in the decision-making process, for effective after-sales service, or for the quality of their goods. While some elements will be more important for particular industries than others, they do still form a strong part of the consumer's decision. For example, when purchasing flat-pack furniture, consumers may be more willing to buy from a company that provides clear, easy-to-follow assembly instructions than from a company with a reputation for confusing, difficult or overly time-consuming directions.

Ultimately, marketing campaigns aim to build long-term customer loyalty. Some consumers will remain loyal to particular brands for long periods, for example by buying the same brand of milk or car for many decades. Poor marketing, however, is one reason consumers might shift to competing companies. Similarly, an effective campaign can either aim for a short-term boost to demand, or focus on building and reinforcing existing brand loyalty.

CASE STUDY: MARKETING VEGEMITE

The history of Vegemite highlights the key role played by marketing in affecting consumer decisions. When Vegemite was first introduced in Melbourne in 1923, it was unsuccessful in challenging the dominance of Marmite. A new marketing strategy introduced in 1928 included changing Vegemite's name to Parwill. This was intended to be a joke based on the names of the two competing products: 'Ma [mother] might, but Pa [father] will.' However, this campaign failed to increase the company's market share and in 1935 the name change was reversed.

In 1954, an advertising campaign on radio introduced the 'Happy Little Vegemites' jingle, which was redeveloped for television two years later. It was a highly successful campaign, cementing loyalty to the Vegemite brand and eventually becoming an iconic Australian advertisement. The impact of this campaign is highlighted by the decision in 2007 to trace the eight children who appeared in the original TV advertisement and remake it, creating a new campaign designed to emphasise the notion that Vegemite is timeless and appeals to all generations.

Source 5.1.2 By developing successful marketing campaigns, Vegemite has become an enduring success.

Availability and cost of finance

A consumer may wish to purchase an item even though they don't currently have money available to pay the whole price of the item. The availability and cost of other payment options such as lay-by, store loans, payment plans, credit cards and bank loans may therefore affect consumers' willingness and ability to buy an item.

Many businesses promote their finance options as part of their overall marketing strategy. For example, advertisements may contain references to 'buy now and pay nothing for 12 months' or 'low interest terms

available'. Major supermarkets and department stores may promote their own credit cards, which can also offer special prices not available to customers who don't use the store card. Decisions about these financial products can be very complex.

Consumer preferences

Consumers' purchasing patterns are heavily influenced by factors such as age, gender or individual preferences. While these can be affected to some extent by effective marketing, underlying consumer preferences are a powerful influence on decision-making. For example, a consumer who strongly dislikes the taste of strawberry-flavoured milk will not buy it, even if strawberry-flavoured milk is the focus of a prize-winning marketing campaign.

Some businesses manage this by carefully targeting their offering to a specific group of consumers, such as a bakery specialising in gluten-free foods. Others attempt to maintain their appeal across a wide range of consumer groups, such as a department store offering clothes for all age groups.

Fashion trends

Fashion can be a strong element of consumer preferences, and can lead to very short-term changes in patterns of demand. Businesses that link their offerings too closely to temporary fashions can struggle to maintain their viability in the longer term when demand eases with the end of the fad.

This was seen in the Hypercolor clothing fad. In 1991, Hypercolor T-shirts enjoyed tremendous popularity. They changed colour as they warmed up, for example when the wearer was touched by another person. The fad soon slowed as consumers realised that the Hypercolor effect could be ruined by washing the item in hot water. The company went bankrupt in 1992.

Shifts in fashion can cause large alterations in the price of the item. The Cabbage Patch Kids mania of 1983 is an excellent example of this. As Cabbage Patch Kids dolls became a 'must-have' item, stores could barely keep up with demand for the dolls at the $30 retail price. In the second-hand market, a good quality doll could sell for more than $100.

Convenience

Under some circumstances, consumers may be willing to undertake some degree of inconvenience in order to obtain their desired goods or services. For example, consumers may travel significant distances to buy a car or to consult a highly-regarded specialist, while others may wait for items ordered from overseas suppliers. All else being equal, however, convenience is an important factor in consumers' decisions. For example, providing safe, secure facilities for online purchases can make it more convenient for consumers to purchase items from a particular company. It also allows the company to sell its products to a much wider market than the local area where it is based.

Source 5.1.3 Cabbage Patch Kids dolls became extremely popular and regularly sold out in the early 1980s.

Source 5.1.4 BioBean Coffee, a family business based in the Perth foothills, was founded on ethical principles; specialises in quality organic, fairtrade coffee. It has been steadily growing since 2005 and sells online and direct to a number of Western Australian and Tasmanian retail outlets. It was the first roaster in Western Australia to achieve organic certification.

Consumers' desire for convenience has also created new opportunities for companies. There are growing markets for services like the delivery of groceries, or meal packs providing all the ingredients to cook a specific meal.

Health, ethical and environmental considerations

Some groups of consumers can be heavily influenced by considerations such as health, organic farming, fair trade and sustainability. When maintained in the medium to long term, these purchasing patterns can, in turn, influence companies' behaviour by encouraging them to alter their product ranges, seek certification from reputable organisations, or offer other evidence of their ethical behaviour.

For example, rising consumer concern about the nutritional content of many fast foods prompted companies such as McDonald's to actively promote a range of 'healthy options' as part of their menus. Together with the company's existing programs including the Ronald McDonald House Charities and sponsorships of Clean Up Australia and Little Athletics, this allows McDonald's to present itself as responsible and ethical, while extending its appeal to a broader range of customers than previously.

ACTIVITIES

Remembering and understanding

1 List six factors consumers may take into account when making decisions about which goods and services to purchase.
2 Define the term 'marketing'.
3 List three factors that may heavily influence consumers' purchasing patterns.
4 What happened to the company that sold Hypercolor T-shirts?

Applying and analysing

5 Briefly describe the substitution effect.
6 Summarise the marketing history of Vegemite.

Evaluating and creating

7 Create an information campaign to educate Australian companies about the dangers of using fashion to influence consumer decisions.
8 'Health, ethical and environmental considerations have an increasing influence on consumer decisions.' Do you agree? Justify your answer.

UNIT 5.2

Making financial decisions

Borrowing and investing

Financial products fall into two broad categories: **investments** and **liabilities**. Investments potentially provide an income to the consumer, such as shares and term deposits, while liabilities allow the consumer to borrow money now and repay it later, such as credit cards and bank loans. Borrowing money gives the consumer the opportunity to enjoy the benefits of a good or service today, but paying for it in the future. The factors influencing consumers' financial decisions can be very complex, particularly when choices made today can have implications extending many years into the future.

The most important elements of these decisions include:

- the **interest rate**
- fees and charges
- the degree of risk
- the type of financial product.

Interest rate

The interest rate is the amount charged or paid for the use of money, expressed as a percentage of the loan amount. When a consumer is investing, including depositing money in savings accounts, they are effectively lending their money to a financial institution and so will receive interest payments. On the other hand, when a consumer borrows money they need to pay interest to the financial institution.

A household may therefore receive interest on their savings accounts and term deposits, while also paying interest on their mortgage and credit cards. As a result, any change in interest rates can have a significant effect on a household's cash flow.

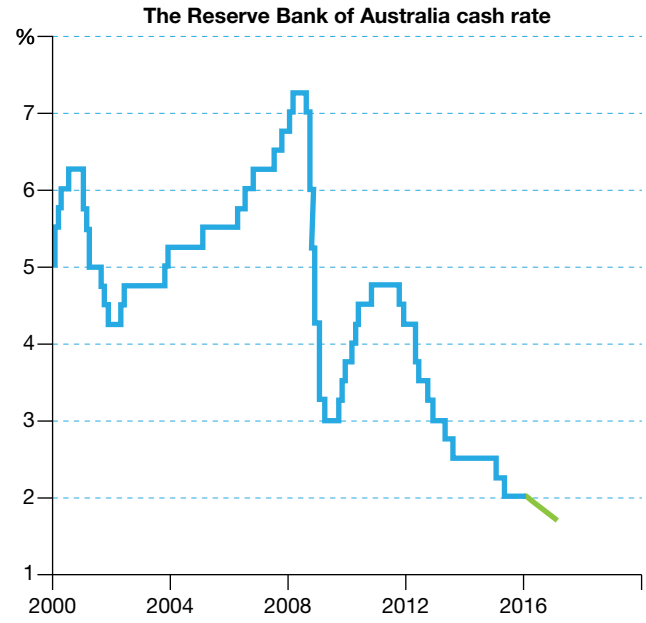
CREDIT HISTORY

The interest rate charged on a loan depends partly on the general state of the economy, and partly on the specific circumstances and **credit history** of the borrower. A person's credit history is a record of their debt repayment history. Someone with a poor credit history, perhaps as a result of many late or missed repayments, will often be viewed by a financial institution as a greater risk than someone with a strong credit history. They will generally be required to pay a higher interest rate when they borrow money in the future.

CASH RATE

When a loan is taken out, the interest rate can change if the loan has a **variable rate**. The rate is usually based on changes to the **cash rate**, the interest rate set by the Reserve Bank of Australia in response to general conditions in the economy, as shown in Source 5.2.1. If economic conditions are deteriorating, the Reserve Bank may reduce interest rates. This encourages businesses and households to borrow more money because the cost of borrowing is lower. This stimulates the economy by increasing the overall level of demand. The Reserve Bank can also increase interest rates to reduce the amount of borrowing and demand in the economy.

However, banks and other financial institutions don't have to change their interest rates simply because the Reserve Bank has; they can change their rates whenever they feel it is appropriate. For example, if the competition between banks is particularly intense, some may reduce their interest rates to attract new customers.



Source 5.2.1 The cash rate fell rapidly in 2008 and 2009 as the Global Financial Crisis led to fears of falling economic growth and rising unemployment in Australia. RBA, Statement on Monetary Policy, February 2016

VARIABLE OR FIXED RATES

Interest rates on a loan can either be variable or fixed. A variable rate changes whenever the bank's interest rate changes. A **fixed rate** means that for a set period of time, often one, three or five years, the interest rate will remain the same. For example, a consumer may choose to fix their mortgage for five years so they know exactly what their repayments will be over that period, protecting them against any interest rate increases. However, the certainty of knowing what the repayments will be must be balanced against the possibility that interest rates could fall during the fixed period, leaving the borrower worse off as a result of their decision to fix their rate.

Some loans have an initial interest-free period or even a delayed start to repayments. This may make the loan attractive to the potential borrower, but can lead to difficulties if the borrower doesn't fully consider how their repayments will change over the life of the loan.

Many credit cards carry an interest-free period, usually one month, on all purchases. This means that if the outstanding balance on the card is paid off each month, the consumer does not incur interest costs.

Fees and charges

Aside from interest payments, there may be many other fees and charges associated with financial transactions. An application fee may need to be paid even before a loan has been approved by the financial institution and without any guarantee that the application will be successful. Products such as credit cards and mortgages may also have annual fees that are typically added to the required payment on the anniversary of the loan's commencement or the credit card's approval.

Decisions made by the consumer once they have entered into a financial agreement may lead to additional costs. Early withdrawal of funds from fixed-term investments or paying off a mortgage early may lead to additional charges. Overdue payments can attract penalty interest rates, as well as having an impact on the borrower's credit history.

When evaluating financial products, consumers need to ensure they are aware of all the fees and charges they may be required to pay, as these contribute to the true cost of the arrangement. In many cases, these additional costs can be avoided with careful negotiation, planning and management.

Did you know?

Global Financial Crisis

Widespread use of initial interest-free periods on mortgages in the United States was one cause of the Global Financial Crisis (GFC) of 2007–08. Many very low-income households that would normally be considered a very high credit risk were offered mortgages with significant interest-free periods. When they had to start making interest repayments, they could not afford them and many defaulted on their repayments. This caused significant human suffering as families lost their homes, and financial difficulties as banks were losing large amounts of money (see Source 5.2.2).

Source 5.2.2 The Global Financial Crisis was partly caused when low-income households had to start paying interest on their mortgages.

The degree of risk

Taking out a loan involves some degree of risk: if the consumer can't repay the loan, they are likely to lose the assets associated with that loan, receive a bad credit history and experience significant stress. For example, if a consumer can't repay their mortgage, they may be forced to sell their house, make difficult changes to their spending patterns, and even be declared bankrupt. Bankruptcy means being legally declared unable to pay debts. The person may lose their assets as banks try to regain some of the money owed to them.

In the case of mortgages, many financial advisers consider that a household is experiencing mortgage stress if they are spending more than 30 per cent of their salary on repayments. This means that they are very vulnerable to any deterioration in their circumstances, for example if interest rates rise or household income falls.

	1994–95	2013–14
Owner without a mortgage	3%	3%
Owner with a mortgage	18%	16%
Renter	19%	20%

Source 5.2.3 Housing costs as a proportion of household income before tax have been roughly constant over the last 20 years

INVESTMENT RISKS

Investment products also have an element of risk. Investing, whether in shares, real estate, managed funds or other areas, does not guarantee an income. An investment may lose value, particularly if the general economic conditions are poor. If the consumer has borrowed money in order to purchase this investment, the risk is doubled—there is the risk associated with repaying the initial loan, in addition to the risk of uncertain returns.

DURATION OF THE LOAN OR INVESTMENT

Longer-term loans or investments are usually associated with greater risk than financial products that have a short lifespan. A significant source of risk with long-term loans arises from their duration: it is extremely difficult to predict what may happen over the next 30 years. This makes it even more important for consumers to ensure they retain sufficient flexibility in their finances to allow them to respond to unfavourable events without undue stress.

DIVERSIFICATION

One of the key principles for managing risk when investing is called diversification. This means spreading investments across several different areas to reduce the extent to which the investor's income depends on any single source. If one source experiences difficulties, for example if mining shares are not performing well, the diversified investor has other sources of income, which will hopefully be unaffected by troubles in the mining industry.

ATTITUDES TO RISK

Attitudes to risk tend to vary as we age. Typically, the closer a person is to retirement, the more risk averse they become because they have less time to make up for any losses before they retire. This means they are less willing to engage in risky behaviour than when they were younger, which affects both the type of investments they purchase and the loans they take out.

It is important to note that different people have different attitudes to risk, even within the same age bracket. Some people may be highly risk averse even at a young age, reluctant to borrow even small sums of money, while others may be willing to engage in very risky projects at advanced ages.

Choosing the best type of financial product

Ensuring that the financial product is appropriate for its purpose can help reduce the overall interest burden and avoid unnecessary fees and charges. For example, if a household wants to deposit a sum of money in a bank but needs to be able to withdraw it as required, a fixed-term savings accounts would not be a good choice as fees are likely to be charged if the customer withdraws their money before the end of the term.

MORTGAGES AND CREDIT CARDS

A mortgage has a different structure to a credit card, even though both are methods by which households can borrow money. A mortgage usually has a duration of 25 years or more and relates to a specific property. If the household is experiencing severe mortgage stress, the property could be sold to raise money to pay off the loan.

Source 5.2.4 A stock exchange is where shares in companies can be bought and sold. Stock exchange websites such as that of the Australian Securities Exchange (ASX) provide investors with information about markets around the world.

A credit card is designed to finance short-term purchases. While the financial institution will check an applicant's credit history before issuing a credit card, it is not attached to any specific asset owned by the customer. This means that a credit card is usually a riskier undertaking for the financial institution than a mortgage, and therefore will have a higher interest rate.

It is a good idea to regularly review all aspects of a household's finances, as the investments and loans selected some time ago may no longer be the best way to meet the household's needs.

ACTIVITIES

Remembering and understanding

1 What is the difference between an investment and a liability?
2 Who sets the cash rate?
3 List three consequences if a consumer cannot repay their loan.
4 What is a credit card designed to do?

Applying and analysing

5 Explain why someone with a poor credit history may have to pay a higher interest rate when they borrow money.
6 Analyse why attitudes to borrowing money change over a person's lifetime.

Evaluating and creating

7 Create a brochure explaining how credit cards work.
8 Research the Global Financial Crisis and evaluate the action of banks.

UNIT 5.3

Increasing productivity

Importance of productivity

Productivity can be defined as the amount of output produced by each unit of input. For example, from the input of one tiler it may be possible to lay one square metre of tiles in an hour, which is the tiler's output. Or, from the input of one hairdresser, it may be possible to style 10 customers' hair in one day, which is the hairdresser's output.

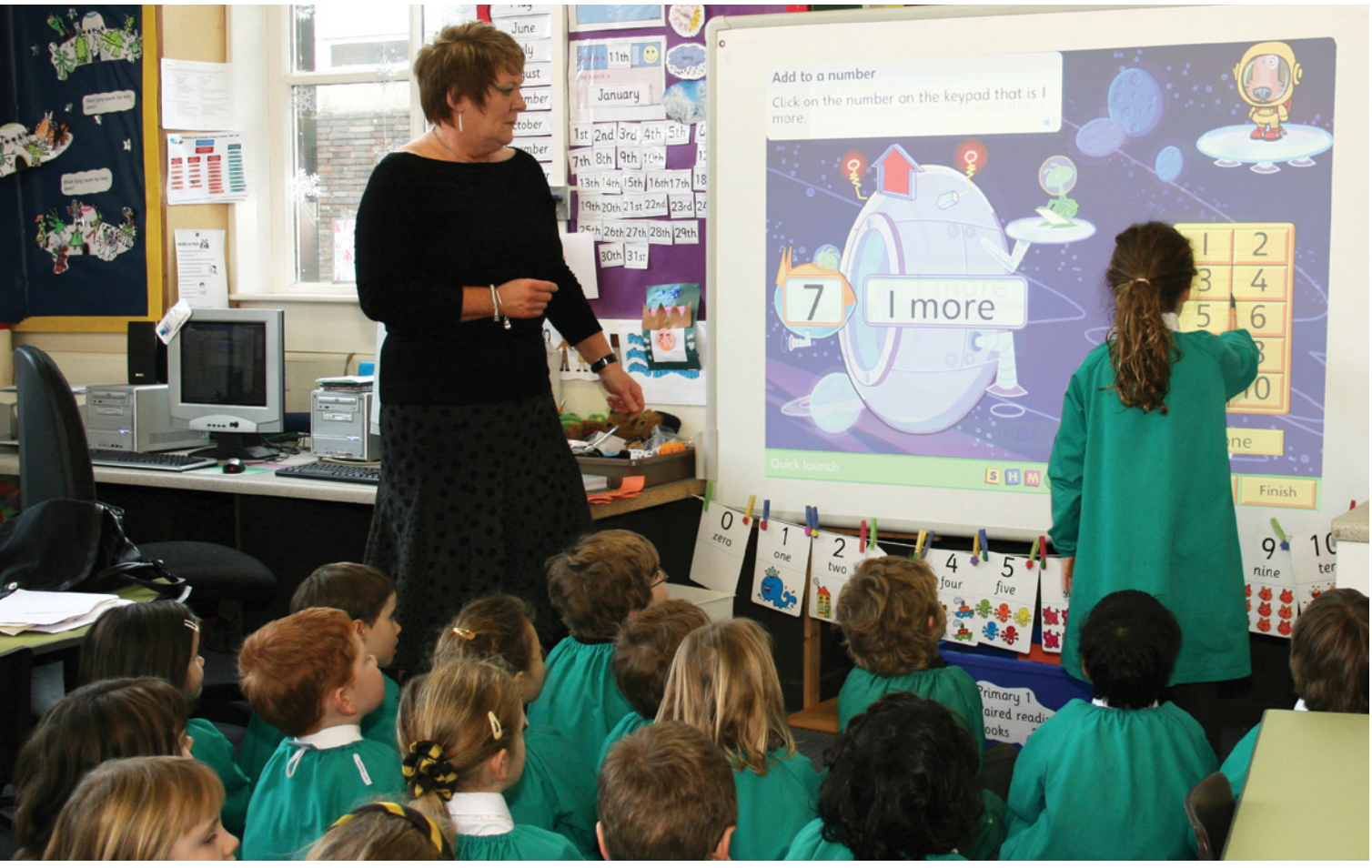
Businesses are very interested in improving the productivity of their workforce as higher productivity can contribute to higher profits. If productivity rises, this means that more output can be produced in each period of time, meaning there will be more finished units available for sale without the business having to pay the costs associated with hiring additional workers.

Strategies that businesses use to improve their productivity fall into two broad categories:

- measures to improve the quality of the workforce
- measures to increase the quantity and quality of **capital** available.

Training: improving the quality of the workforce

One of the most important methods businesses use to improve their productivity is training their staff. This can take two broad forms: pre-service training, which potential employees undertake before commencing work in a particular career; or in-service training, which employees undertake while employed by a particular company.



Source 5.3.1 It can be very difficult to measure the productivity of some workers. Measuring this primary school teacher's productivity based on the number of students who receive A grades might be easy, but may not be appropriate for all teachers. Similarly, measuring the productivity of a doctor or nurse needs to involve more than just the number of patients they see in a day.

Source 5.3.2 In order to work as an electrician in WA, an Electrical Licence must be obtained. This lasts for five years, after which in-service training must be completed in order to renew the licence.

PRE-SERVICE TRAINING

Pre-service training includes formal education and training which prepares the student for a particular career. TAFE and career-specific university courses are examples of this. To help ensure that graduates are ready to make a productive contribution once they start work, some businesses and industry groups enter into partnerships with training providers. For example, Murdoch University's Work Integrated Learning program provides students with relevant work experience and also allows potential employers to have input into the training process.

IN-SERVICE TRAINING

Ongoing training is an important part of many careers. Businesses may provide training for their entire staff, or for targeted groups or individuals. This may take place within the working day, but can also occur during the employee's own time. In either case, most businesses pay part, if not all, of the fees directly related to relevant courses. In many cases, these are short courses, running for a few hours or days, and focus on a particular area of the employee's work. An accountant might attend a seminar on changes to one aspect of company reporting, or a sales assistant might be required to participate in a short course on new sales techniques.

In some career paths, it is common for employees to identify their individual training needs, often alongside whole-company initiatives and priorities set by management. When employees identify their own training needs, the employer would only pay for this if there was clear relevance for the employee's contribution to the business, either in their present role or a likely future opportunity. Providing opportunities of this nature can contribute to productivity gains while also having the benefit of boosting the morale and job satisfaction of employees.

Under some circumstances, businesses can provide support for employees undertaking longer-term training programs such as further study for formal qualifications. This has the advantage of allowing the company to retain the employee, perhaps on a part-time basis, while they are studying, and can make it easier for the employee to afford the significant investment that can be required. In addition, by supporting employees who are engaged in further study, the business gains access to the latest theories

and methods being taught by training institutions. For example, a manager working towards a Master of Business Administration may bring new ideas and theories back to their workplace that can enhance overall productivity.

CERTIFICATION

In order to work in some jobs it is necessary to have formal industry certification beyond a TAFE or university qualification. In many cases, to retain this certification employees, such as electricians, doctors and accountants, need to demonstrate that they have engaged in sufficient relevant in-service training. These formal requirements for ongoing training help ensure that these professionals are implementing current best practice rather than relying on what may have been standard 20 years ago.

Improving the capital stock

In order to create output in any business, workers need to combine their labour with some kind of capital; human-made items such as computers, shovels and vehicles that support labour in the production process. Businesses can enhance productivity by improving the capital that those workers have access to. This can occur through measures to increase the quantity of capital, or the quality of it.

Economists distinguish between **capital widening** and **capital deepening**. Capital widening occurs when the capital stock increases at the same rate as the labour force. As an example, in a business where each employee is a given a laptop, capital widening would occur if, when a new employee commenced, the business also acquired a new laptop. This raises the total amount of capital available to workers in the business but doesn't change the amount of capital per worker.

Capital deepening occurs when the capital stock increases faster than the labour force. If a bakery purchases an automatic oven for cooking pizza, the productivity of each employee increases without the business needing to hire additional workers. Economists consider that capital deepening results in greater productivity gains than capital widening, so long as each worker has access to the essential equipment they require to do their job. This is because capital deepening often takes the form of shared equipment that multiple employees have access to.

INVESTING IN NEW TECHNOLOGY

Capital deepening often takes the form of investing in new technology. This may involve upgrading existing software or purchasing entirely new items. Investing in new technology has an element of risk, as a system that works well for one business in an industry may not integrate with the existing systems in another business. Before committing to a particular investment, the business needs to evaluate new systems carefully, considering not just the cost of implementing new technology, but also any issues involved in maintaining it.

Sometimes, a business may choose to invest in internal programs to develop custom solutions for the business's specific situation. Research and development projects can be very expensive, but bring the potential benefit of producing an item that is exactly targeted to the needs of the business.

In recent years, there have been significant changes in the ways businesses receive payments from customers, which can be considered capital deepening. For example, tradespeople: rather than having to wait for a customer's cheque to clear or having to bear the risks of carrying large amounts of cash, can now receive payments instantly by entering the customer's credit card details into a mobile payment system on their smartphone or tablet. Investing in mobile EFTPOS facilities, activating PayPass systems and establishing secure online payments can have multiple benefits: they enhance the productivity of workers, but may also make the business more attractive to potential customers by offering convenient, safe payment systems.

JUST-IN-TIME INVENTORY MANAGEMENT

One of the largest areas of expense for trading businesses (those that sell goods, rather than services) is the requirement to maintain a suitable level of inventory. Inventory is a business's stock of items, including resources that are going to be used in the production process and finished goods awaiting sale. If the business can reduce the amount of inventory it holds, without reducing its ability to sell to customers, this can lead to substantial cost savings. By reducing the space required to store the inventory, simplifying security, reducing concerns about items perishing, and reducing the substantial costs of having purchased, or made, items but not yet sold them, the business can make significant cost savings.

Source 5.3.3 Manual inventory management can be very time-consuming and is prone to human error. Shifting to just-in-time processes has the potential to greatly enhance the business's profitability.

Just-in-time inventory systems aim for the inventory to arrive from suppliers just in time for it to be used or sold. Investment in these systems can be very expensive as they require reliable communications systems and sometimes tracking mechanisms so the business knows exactly where each item is. As with all investments, the business needs to evaluate whether the costs of purchasing, setting up and training staff in this system will be outweighed by the cost and productivity benefits it can provide.

ACTIVITIES

Remembering and understanding

1 Why are businesses interested in improving the productivity of their workforce?
2 List two measures businesses use to improve their productivity.
3 What is pre-service training?
4 Define the term 'inventory'.

Applying and analysing

5 Examine the benefits for a business of an employee undertaking in-service training such as further study for formal qualifications.
6 Distinguish between capital widening and capital deepening.
7 Explore industries where investing in new technology is commonplace and create a list of them for your class.

Evaluating and creating

8 Compile an information report about in-service training for an employer to give new employees. Ensure the benefits of the training to both employee and employer are made clear.

UNIT 5.4

Responding to improved economic conditions

New opportunities from higher profits

Most businesses aim to earn a reasonable level of profit. When conditions in the economy improve, for example when the economy is in an upswing phase of the business cycle, this can often provide a range of new prospects for the business as sales and profits rise. These can include opportunities to:

- research new products
- expand market share
- invest in new technology or facilities
- consolidate the business's financial position.

Researching new products

The boost to profits that accompanies an improvement in the economic environment can be used to develop the company's next range of products. Research and development is often very expensive and there is no guarantee that the business will receive a worthwhile return on its investment: it is far from certain that research projects will produce a viable potential product. Due to this high level of risk, research and development budgets may be a target for generating cost savings during unfavourable economic conditions. Once circumstances improve, the funding can be restored so the business can continue developing the ideas that may deliver a future competitive advantage.

Source 5.4.1 Rio Tinto's HIsmelt facility when it was operating in Kwinana, Western Australia

From 2003 until 2008, Rio Tinto operated its HIsmelt research facility in Kwinana. This was a unique project with considerable potential to revolutionise the steelmaking industry and provide new opportunities for Rio Tinto's iron ore products. However, the onset of the Global Financial Crisis in 2008 led to significant reductions in prices for steel and therefore also for iron ore, squeezing Rio Tinto's profits. This led to the closure of the HIsmelt project. However, as the steel industry recovered from the GFC and new partnership opportunities emerged with China and India, it was feasible for Rio Tinto to revive the HIsmelt research in 2014, albeit in China.

Expanding market share

Another way in which businesses can respond to improved profitability and economic conditions is to expand their market share. They can use their increased profits to pay the costs of establishing the business in a new area, with the hope that a larger company with a greater market share would be better positioned to manage future economic downturns.

For some businesses, the cheapest and easiest way to increase their market share is to open new branches. This might take the form of a legal business opening an office in a new area, or a plumbing company setting up a new franchise. It can also involve the establishment of a sales office or outlet in an entirely new country, such as West Australian wineries employing agents in China. As the demand in a particular area expands with the improving economy, a business may be able to obtain a share of the growing market without causing excessive competition with established businesses.

Wine consumption in China reached 4.45 billion litres in 2015 ...

Australian wine is ... well received by the market due to varied price points, stable quality, continuous marketing, industry star rating, etc.

Chinese middle-class consumers are the main market for higher value Australian wines. Their importance lies in their long-term, stable purchasing power, brand awareness and influence on those around them, making them the true driving force of the consumer market in the wine industry.

Source 5.4.2 This advice on the Austrade website to Australian wine growers suggests that those looking for growth may be able to move into the Chinese market.

Source 5.4.3 Chinese consumers learning about Australian wine during the TopWine China International Exhibition and Conference 2016 in Beijing, China

Mergers

Mergers allow two businesses to pool all their resources to become one new company, often with an entirely new name. This can allow the new business to achieve far greater efficiency and productivity than the two separate businesses. Depending on the specific businesses involved, a merger may also allow for greater diversification of risk as the merged company has access to the markets previously served by either of the initial businesses.

The Australian Competition and Consumer Act states that mergers that will, or are likely to, substantially reduce the level of competition in a market are prohibited. To give an extreme example, this means that the Coles and Woolworths supermarket chains would not be permitted to merge. However, a supermarket chain operating mainly in Western Australia and a supermarket chain operating mainly in New South Wales would usually be allowed to merge.

BHP Billiton, one of the world's largest mining companies, was formed in 2001 as a result of the merger of BHP, an Australian-based company, and Billiton, an Anglo-Dutch company. A more recent merger occurred in 2016, between the Starwood and Marriott International hotel groups, forming the world's largest hotel chain.

Source 5.4.4 Mergers do not always successfully increase productivity. The merger of German car manufacturer Daimler-Benz with US Chrysler in 1998 to form DaimlerChrysler was dissolved nine years later.

Takeovers and acquisitions

A corporate **takeover** occurs when one business buys another. For example, in 2006 Disney Studios purchased Pixar Animation for around US$7.4 billion. When a takeover occurs, the newly acquired company may still operate as an independent division of the parent, or it may be integrated into the parent company.

Sometimes, a takeover is referred to as an **acquisition** if the target is willing to be purchased by the other business. The term 'takeover' may therefore imply that the target is resisting the purchase, but it is important to note that this is not necessarily the case. In either case, the parent company becomes the owner of the target's assets and responsible for any debts the target may have.

In 2010, the US business Kraft (which already owned Vegemite, among many other brands) was successful in its takeover of Cadbury, a British business. However, not all ventures of this nature are successful. In 2005, News Corp acquired MySpace for US$580 million. Initially, this worked well for News Corp, but the spectacular growth of Facebook led to the decline of MySpace, which was sold in 2011 for just US$35 million.

Mergers, acquisitions and takeovers create a larger company that may have greater market share in a particular area, or may reach into more markets than previously. While mergers may happen at any stage in the business cycle, acquisitions and takeovers are more likely to occur when the buyer has access to plenty of finance, which will normally be during an upswing.

Investing in new technology or facilities

As economic conditions improve, many businesses choose to use their additional earnings to help set the business up for the future by investing in new technology or facilities. This may include building new production facilities or upgrading existing systems. For example, in late 2014, Tesla Motors responded to rapid increases in demand by temporarily halting production at its plant in California in order to increase the factory's capacity and install a number of upgrades. During the two-week shutdown, Tesla employees put 65 000 hours of work into the upgrades; this demonstrates the scale of the operation and the degree of confidence felt by the company in order to engage in an investment of this magnitude.

In 2014, computer hardware company Intel announced that it would spend US$6 billion upgrading its manufacturing facility in Israel. A range of incentives offered by the Israeli Government facilitated this project. This highlights the key role that government policy can play in businesses' investment decisions. When very large sums of money are at stake, even small incentives from a government may encourage a business to invest in one country rather than another.

Consolidating the business's financial position

Not all businesses will respond to improved economic conditions by engaging in spectacular mergers, takeovers or investment projects. In some cases, improved conditions provide a welcome opportunity to clear debts acquired during more difficult times, or to engage in restructuring to set the context for future growth. This could include selling off entire divisions that are no longer seen as necessary to the company's future, or changing the managerial structure to help the business become more flexible and responsive to changing conditions.

While businesses will respond to improving economic conditions in many different ways, increased cash flow is usually seen as presenting new opportunities. A business that simply accepts the higher profits, paying them to owners or shareholders, may find in the near future that it is being out-competed by more flexible, proactive rivals.

Source 5.4.5 Aerial view of Intel's factory in Qiryat Gat, Israel.

ACTIVITIES

Remembering and understanding

1. When conditions in the economy improve, what opportunities might be open to businesses?
2. What is the cheapest and easiest way for some businesses to increase their market share?
3. Which company did Disney Studios purchase in 2006?
4. State how the Israeli government facilitated Intel's upgrade to its Israeli manufacturing facility.

Applying and analysing

5. Use research to identify an example of a successful product that was developed by a company through researching new products.
6. What are the key differences between a merger and an acquisition?
7. Investigate the merger of BHP and Billiton in 2001 and explain why it might have occurred.

Evaluating and creating

8. Evaluate the consequences of a merger between the two supermarket giants in Australia—Coles and Woolworths. Would they be positive or negative? Justify your answer.

Inquiry tasks

Standing out from the competition

Evaluate two companies that compete with one another for market share in terms of the strategies they employ to capture the market. With similar products on offer, judge how the companies differentiate themselves from one another in terms of the following factors:

- price
- convenience
- health
- fair trade
- sustainability.

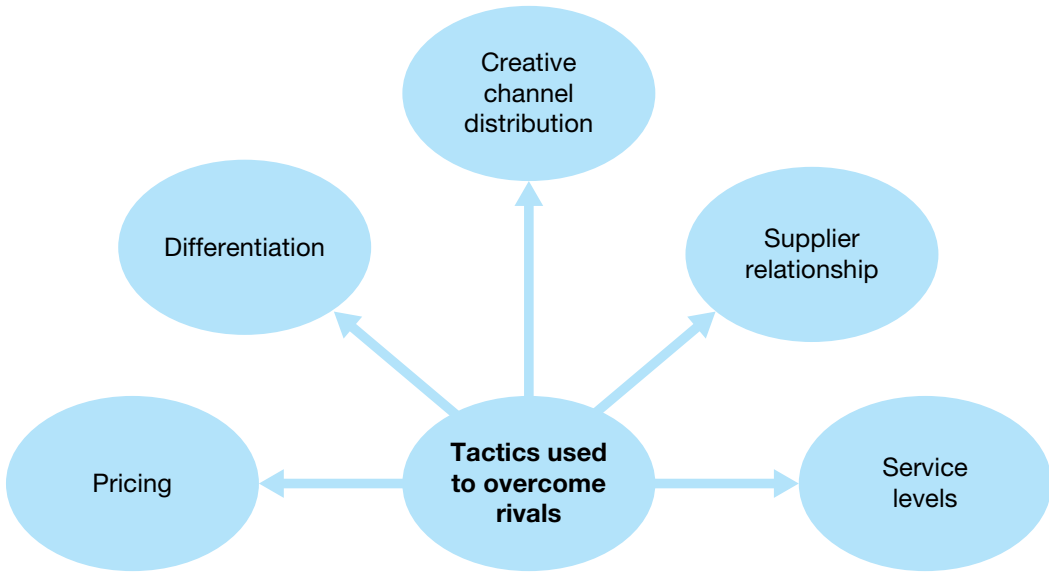
Devise a rating system that tests how well the two companies operate in each of the areas listed above and score them based on their performance. Rival cola companies, car manufacturers, hardware stores, clothing brands or supermarket chains would all make excellent case studies for this task.

Business opportunity

Create a proposal for a new innovation or product that you believe could be developed into a successful business. As well as seeing an opportunity for your business idea, you must also be prepared to formulate a range of strategies that will directly influence consumer decision-making and make your product stand out from other similar products. Some examples of how to do this are shown in Source 5.5.1.

Write up your business proposal as a report. You can use the following subheadings to organise your thinking:

- name and nature of the product
- intended use(s) or application(s)
- target market
- supply and distribution
- recommended retail price
- marketing techniques.



Source 5.5.1 Businesses use a variety of tactics to overcome rival companies and to 'capture' the market.

Marketing techniques

Examine the way that Vegemite and Cabbage Patch Kids dolls are currently marketed. Although these are very different products, both are long established and continue to evolve to meet changing consumer preferences. Distinguish between the marketing techniques used to promote each product. Present your findings as a poster or PowerPoint presentation, demonstrating slogans, special offers, packaging or advertisements from recent marketing campaigns. In your opinion, which set of marketing techniques is the most effective and why?

Being productive

Develop a set of 10 ideas that could be implemented to improve the productivity of secondary school students within their classrooms. Remember that productivity can be defined as the amount of output produced by each unit of input. Therefore, to complete your task, you need to think about changes that could help students to achieve better outcomes for the effort that they put in.

Start by considering the type of outcomes that you want students to achieve; educational progress, academic results, social development and personal growth are all valid outcomes that should factor into your plans. You may be able to see opportunities to implement changes that will help students to be more productive in these areas. You may like to alter the classroom environment, provide different types of resources, or establish new routines and procedures. Write your ideas down and then share them with another member of the class. Work together to produce a final set of five suggestions. Present these to the class and your teacher for their consideration.

GLOSSARY

acquisition gaining possession of

capital all equipment (machinery, buildings, infrastructure) used in production

capital deepening when the capital stock increases faster than the labour force

capital widening when the capital stock increases at the same rate as the labour force

cash rate the interest rate set by the Reserve Bank of Australia in response to general conditions in the economy

credit history a record of a person's debt repayment history

fixed rate an interest rate that remains the same for a set period of time, often one, three or five years

income effect the effect of a consumer's ability to pay a particular price for a product or service, therefore affecting their selection, based on the increase or decrease of their income

interest rate the amount charged or paid for the use of money, expressed as a percentage of the loan amount

investment a financial product that has the potential to make a profit

law of demand an economic principle stating that as the price of a good or service increases, the demand for it by consumers will decrease and vice versa

liability an amount of money that a person is responsible for paying

marketing the entire process by which products are promoted and sold

merger the joining of two businesses to form a single business

productivity the amount of output produced by each unit of input; the efficiency with which an economy employs resources to produce goods and services

substitution effect the effect of a price rise or fall of a product or service on consumer selection to select a cheaper alternative

takeover the purchase of one business by another; the purchased company is sometimes hostile to the purchase

variable rate changing interest rate as the bank's interest rate changes

CHAPTER 6

Environmental change and human wellbeing

At the beginning of the 20th century there were 1.6 billion people on earth. **Pollution** and environmental degradation were problems, but mainly local problems. The world still seemed vast, and large areas remained virtually untouched by the activities of people.

Just over 100 years later, the world's population was heading towards 7 billion and the environmental problems that have resulted from this rapid growth now affect the whole planet. How we manage these environmental challenges and how we address the social and economic inequalities that exist between and within places are critical to our future wellbeing.

Source 6.0.1 Human circle around the North Pole. Tourists can now visit an area of the world that remained largely untouched until the 20th century.

UNIT 6.1

Environmental changes and sustainability

People and the environment

Geographers are interested in the relationship between people and the **environment**. People depend on the environment for their survival and wellbeing. The environment supports and enriches our lives by providing raw materials and food, absorbing and recycling wastes, and being a source of enjoyment, inspiration and spiritual wellbeing. It also influences our lifestyles, our recreational activities and the ways in which we use the land.

Environmental change

Environmental change is any alteration to an environment that disturbs natural **ecological** processes. Some environmental changes have beneficial outcomes for humans. The clearing of land for agriculture and the grazing of animals, especially when combined with irrigation, have increased food production; and mining and forestry have provided the resources necessary to construct water storage facilities, buildings, machines, vehicles and transport infrastructure. All these activities have promoted economic growth and employment. Some environmental changes have negative effects, especially if they result in soil erosion, air and water pollution, or climate change.

Sustainability

Sustainability in an ecological context refers to the ability of biological systems to remain diverse and productive. For humans, sustainability is about maintaining the capacity of the environment to support life well into the future as well as the quality of life.

Sustainable development

Sustainable **development** is development that meets the needs of the present population without affecting the ability of future generations to meet their needs.

The aim of sustainable development is to achieve improvements in people's quality of life or wellbeing while protecting the environment. Sustainable development and good environmental management go hand in hand. If we are to put sustainable development into practice, we must:

- use the earth's renewable resources in ways that do not reduce their usefulness for future generations
- involve people in making the decisions that affect their lives and their environment
- develop technologies that are cleaner, use less energy and require fewer natural resources
- reduce the waste we produce, and make products that last longer and are easy to recycle and repair
- reduce the amount of energy we use
- encourage the development and use of renewable energy from the sun, wind and flowing water.

Challenges to sustainability

Population growth

Many of the challenges facing humanity are directly related to the surge in the world's population. Increasing numbers of human beings, combined with improved material standards of living (for some), have greatly increased the demands people place on the planet, its resources, ecosystems and environmental processes.

Energy use

The burning of **fossil fuels** to meet people's energy needs has had a major impact on the earth's atmosphere. The development of alternative sources of energy, such as solar energy, wind power, tidal flow and hydroelectricity, is one way of reducing people's reliance on fossil fuels.

Climate change

Over the last 200 years, the amount of carbon dioxide present in the atmosphere has increased by more than 25 per cent. The main cause of this increase is the burning of fossil fuels (oil, coal and natural gas) and the cutting down of trees, which convert carbon dioxide into oxygen. Rising global temperatures, rising sea levels and the retreat of ice caps and glaciers have all been linked to this impact of people on the atmosphere.

Pollution

Pollution is the release into the environment of any matter that has a harmful effect. Pollutants, many of which are the products of our demand for consumer goods, can reduce the ability of the biophysical environment to provide ecosystem services (clothing, food and shelter).

Land degradation

The removal of natural vegetation (the result of deforestation, overgrazing and farming) is the main cause of **land degradation**. When trees are removed, the land is exposed to the agents of erosion: wind and running water.

Urbanisation

The migration of people from rural areas to large cities has created many problems. The rapid growth of cities, especially in developing countries, has overwhelmed the ability of authorities to meet the basic needs of the urban population. Overcrowding, pollution and the growth of squatter settlements are all results of rapid urbanisation.

Exploited oceans

The world's oceans are an important natural resource. Of particular importance are the world's fisheries. These supply vast amounts of food. Unfortunately, the rate at which this resource is being exploited is unsustainable. Pollution is another major problem affecting oceans. If oceans are to be used sustainably, their use must be carefully managed and there needs to be international cooperation.

Habitat loss

A **habitat** is the physical environment in which a community of plants and animals lives. As habitats are destroyed, the communities of plants and animals that depend on them are displaced. Some of these face extinction, such as the orang-utan in Indonesia (see Source 6.1.1).

Source 6.1.1 In the Tripa peat swamp forest of Indonesia, the Sumatran orang-utan population has declined by 80 per cent, as people have burnt forest to clear large tracts of land for oil palm production.

ACTIVITIES

Remembering and understanding

1. Define the term 'environment' and outline its importance.
2. Outline what 'environmental change' is and explain how it can be both beneficial and detrimental.
3. Outline the impacts of world population growth on the environment and how this affects the wellbeing of people.
4. Explain what is meant by the term 'sustainable development'.

Applying and analysing

5. As a class, brainstorm the concept of 'sustainability'. Develop a concept map highlighting the main points raised in the discussion. Use the concept map to write your own definition and explanation of 'sustainability'.
6. Create a mind map highlighting the key challenges to sustainability.

Evaluating and creating

7. Consider the functions of the environment. Assess which of these functions is of greatest value to humans. Justify your choice. What would be the impact if this aspect of the environment were degraded or destroyed?
8. Email the Australian Prime Minister with suggestions about how the government could promote sustainable development.

Pollution

Pollution is any hazardous or potentially hazardous substance released into the environment. It can affect people's wellbeing and the ability of the environment to provide environmental services.

Air pollution

Air pollution is the contamination of the atmosphere by substances that can, either directly or indirectly, impact on human health and welfare. Sulfur dioxide, particulate matter, nitrogen oxides, carbon monoxide and lead are common atmospheric pollutants. Air pollution can irritate existing respiratory conditions, bring on an asthma attack, irritate people's eyes, produce unpleasant odours, damage property and reduce visibility. In the large cities of the developing world, air pollution is a major environmental problem.

Water pollution

Water pollution occurs when pollutants are directly or indirectly released into oceans, rivers, lakes and aquifers without adequate treatment to remove harmful substances.

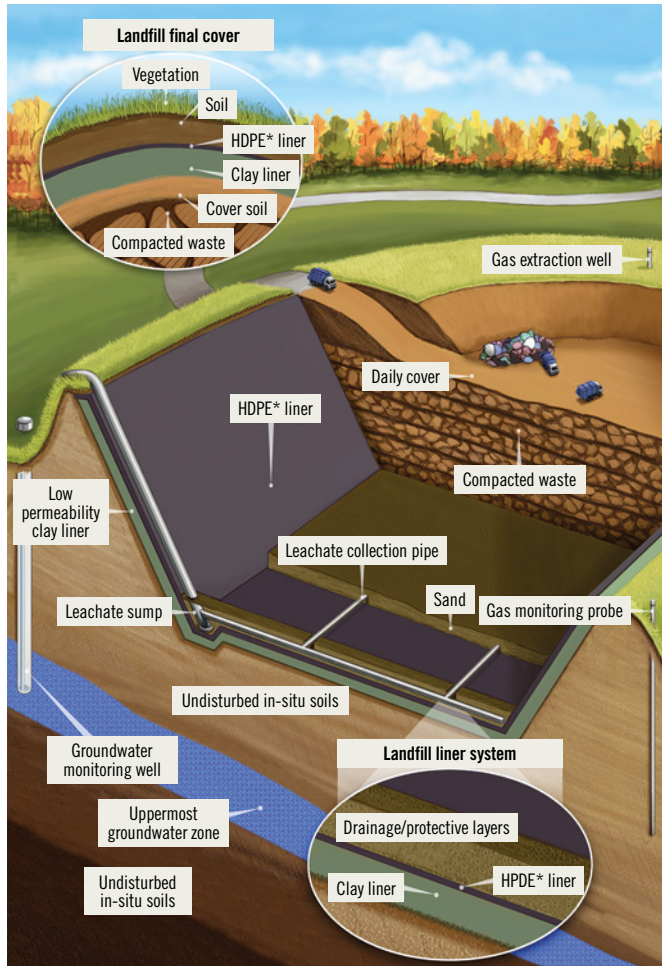
Dirty water is the world's biggest health risk and it continues to threaten both quality of life and public health. Many of our water resources lack basic protection, making them vulnerable to pollution from farms, industrial plants and activities such as fracking. This can lead to drinking water contamination, habitat degradation and beach closures. Urban run-off is another concern. When rainwater runs off roofs and roads into waterways, it picks up toxic chemicals, dirt, litter and disease-carrying organisms.

Solid wastes

Solid wastes include most of the rubbish we would normally throw into rubbish bins, plus many of the wastes produced by industrial plants and the building industry. As populations grow and standards of living increase, the amount of solid waste produced increases.

There are a number of environmental hazards associated with casual waste disposal. These include the contamination of groundwater by toxic substances; soil contamination; methane emissions; and dust, vermin and bad odours. These hazards can also occur in poorly managed landfill sites.

Source 6.2.1 A well-managed landfill site



*HDPE (high-density polyethelene) is a strong plastic.

The alternatives to casual waste disposal are:

- ***recycling***, for example glass, plastic, aluminium, steel and paper can be reprocessed and used again
- ***re-use***, for example printer ink cartridges can be refilled for re-use
- ***waste reduction***, for example goods without a lot of packaging can be bought and re-usable bags used instead of the disposable plastic bags provided by supermarkets.

In Australia, 54 per cent of waste ends up in landfill sites (down from 93 per cent in 1996–97). Wetlands and old quarries have, for many years, been sites for the disposal of this type of waste, but wetlands are now considered too important to use for waste disposal, and old quarries are in short supply.

Types of waste

E-waste

Obsolete electronic goods (known as e-waste) are one of the fastest-growing waste types, and their safe disposal is a major problem. In 2013, nearly 50 million tonnes of e-waste was generated worldwide—or about 7 kilograms for every person on the planet. Mobile phones, laptops, tablets, iPods and iPads, plasma and LCD televisions and electronic gaming machines are all constantly being updated and replaced. These products are made up of hundreds of different materials and contain toxic substances such as lead, mercury, cadmium, arsenic and flame retardants.

Much of the e-waste generated in developed countries ends up in processing plants in India, China and other parts of Asia. There are concerns about the working conditions in these plants because exposure to toxic substances can be hazardous to health.

Plastic waste

Plastic shopping bags are very damaging to the environment. Consider the following facts.

- Australians consume about 6.9 billion plastic bags every year. If these were tied together they would stretch around the world 37 times.
- Every year, up to 80 million of these bags find their way onto our streets as rubbish.
- The World Wide Fund for Nature estimates that more than 100 000 whales, seals, turtles and birds die every year as a result of plastic bags.

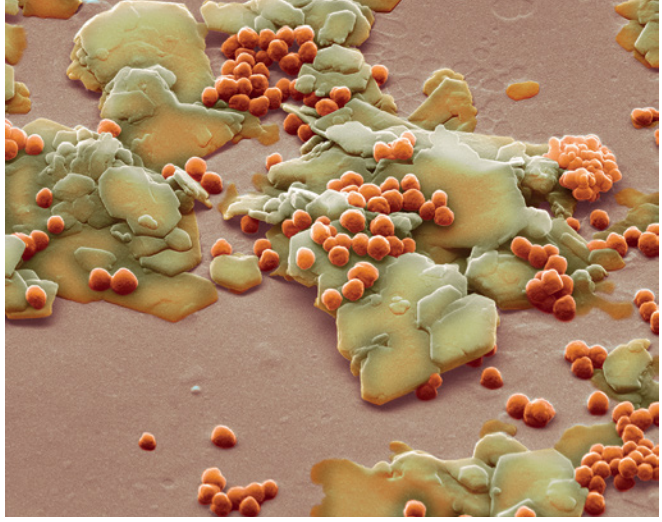
Environmental groups advocate the imposition of a plastic bag levy. These groups hope that imposing this additional cost will encourage retailers (and/or consumers) to find re-usable alternatives.

MICROPLASTICS AND MICROBEADS

Microplastic pollution found in marine environments originates from either larger pieces of plastic broken into smaller pieces over time, or from cosmetic products (soaps, exfoliants and toothpastes) that contain microbeads made from polyethylene. These pieces of plastic, shown in Source 6.2.2, are too small to be filtered during wastewater treatment and are discharged into the water cycle where they make their way into freshwater and marine environments, then the food chain. There are efforts worldwide to lobby cosmetic companies to stop using microbeads in their products.

Toxic wastes

Toxic wastes (sometimes referred to as hazardous wastes) are chemicals that can cause death or injury to living creatures. While toxic wastes are most often associated with industrial processes, they can also be found in the home and are widely used in agriculture, medical procedures and light industries such as dry-cleaning establishments. Toxic wastes can pose a long-term risk to people's health. They can enter the food chain, where they accumulate in the fatty tissues of animals (a process known as bioaccumulation). Some of these animals form part of the human food chain. Once they accumulate, these toxic substances can cause birth defects, cancer and developmental disorders. Abandoned industrial sites can be a major problem, especially when the site and/or adjacent waterways contain e-waste concentrations.



Source 6.2.2 Facial scrub particles shown under an electron microscope. It is thought that small marine animals ingest the microplastics and pass the pollutants up the food chain.

ACTIVITIES

Knowledge and understanding

1. Define the term 'pollution'.
2. Outline the impacts of air pollution.
3. Explain why water pollution is considered a health risk.
4. State why the disposal of solid wastes is increasingly problematic.
5. Outline alternatives to dumping wastes.

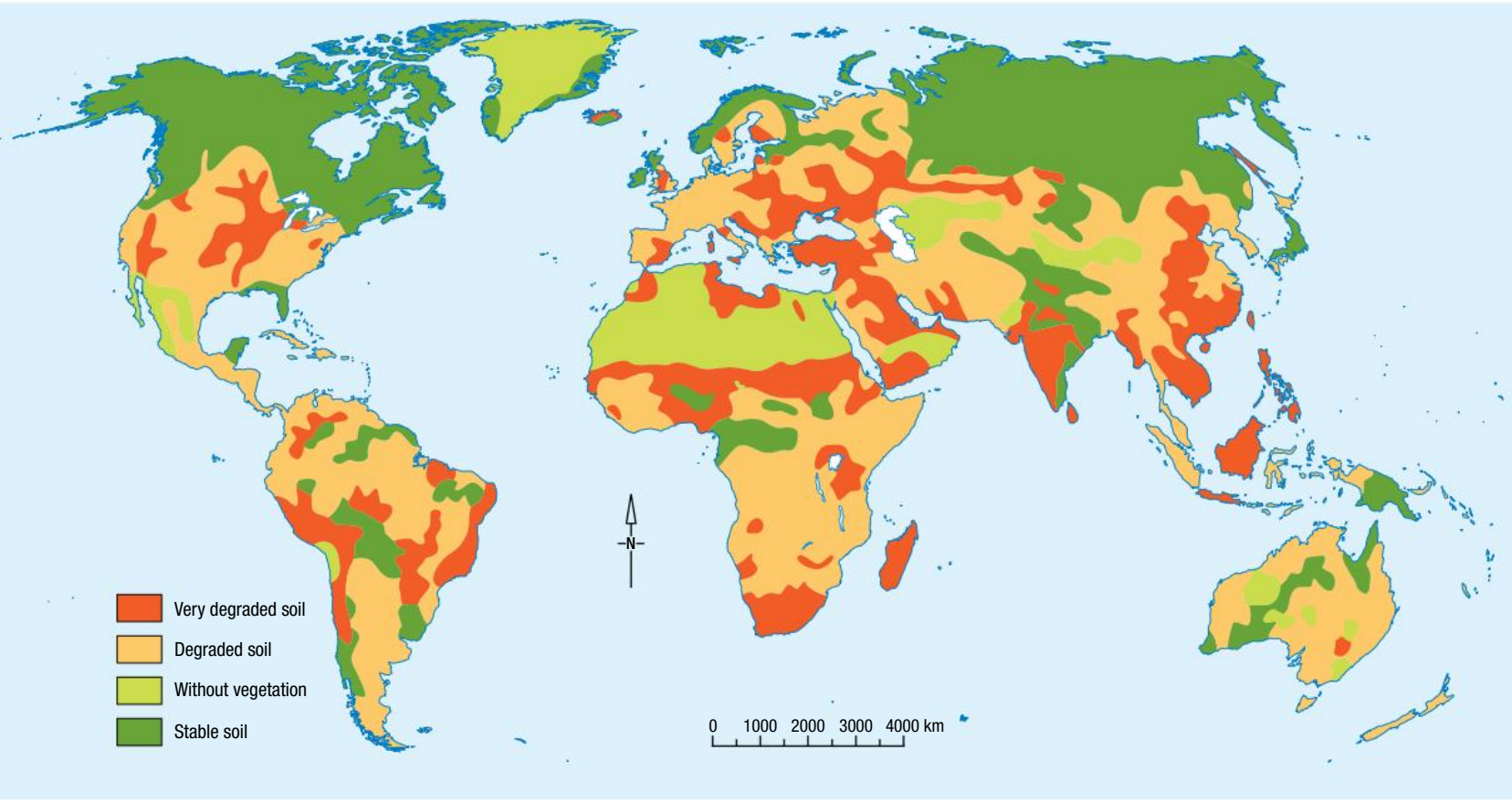
Applying and analysing

6. Study Source 6.2.1 and do further research on the management of landfill sites. Write a report highlighting how a landfill site can be managed in a way that protects the environment.

Evaluating and creating

7. Develop an information campaign educating the public about one of the types of pollution: e-waste, plastic waste or toxic waste.

Land degradation



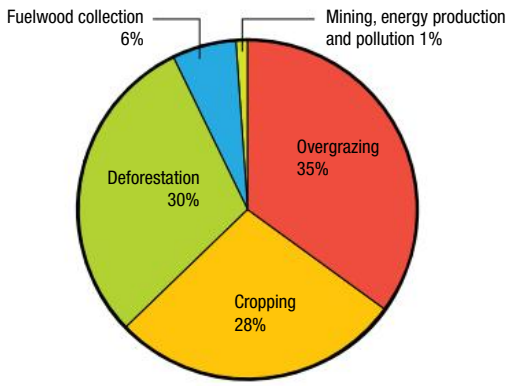
Source 6.3.1 Land degradation is a worldwide problem. UNEP, 1997

Causes of land degradation

Land degradation is the damaging of land so that it is not as productive as it once was. If land is degraded, it loses its ability to produce the quality of vegetation or crops that it once did. Land degradation is one of the most important environmental problems in the world because it is so widespread and so difficult to reverse.

Land degradation is a worldwide problem, as shown in Source 6.3.1. The activities of people that contribute to land degradation include over-clearing of the natural vegetation (including deforestation)—a process that contributes to both soil salinity and erosion—and overgrazing by animals. When too many cattle or sheep are put onto an area of land, they eat all the grass and bushes, leaving nothing to hold the soil together. These heavy, hard-hoofed animals cause the soil to compact and damage its surface. Elsewhere, overcropping of the land also exposes the land to erosion, as does the collection of fuelwood by people living in developing countries.

These causes of land degradation are examples of poor land management. Usually this is unintentional, but it may be caused by greed. Source 6.3.2 illustrates the main causes of land degradation.



Source 6.3.2 Overgrazing is the largest single cause of land degradation.

Source 6.3.3 Salinity caused by salt seeping upwards from groundwater to the surface of the soil, near Lake Eyre, South Australia

Soil degradation

Soils can be damaged, or degraded, in four main ways: through salinity, erosion, compaction and acidification.

Soil salinity

Increasing levels of salt in soils is common in some parts of the world, including Australia. It is caused by salty groundwater (water that is stored in rock and soil below the surface) reaching the surface of the soil. Normally, this water level is controlled by large trees, which pump water from the soil as they transpire. When trees are cut down, salty water may rise to the surface. The water evaporates, leaving a salty crust.

Soil erosion

Soil erosion is the removal of topsoil by water or wind. Erosion occurs wherever the soil is unprotected by plant cover. Once the original plant cover is removed, soil can be carried away easily by strong winds or heavy rain. Winds can strip the land of its topsoil and carry it hundreds of kilometres, and heavy rain and run-off can cut deep gullies in the soil.

Source 6.3.4 Gully erosion caused by heavy rains washing away loose topsoil, Ukraine

Soil compaction

Soil can be compacted by the weight of heavy machinery or the trampling of livestock that are much heavier than native animals. The air spaces in the soil are compressed so that a hard layer develops on top. This reduces infiltration and makes it difficult to use the land for crops or pasture.

Soil acidification

Soil can be made acidic by the overuse of chemical fertilisers. Often, fertilisers are essential to ensure that the soil keeps producing crops. When used over a long period of time, however, fertilisers can also harm the soil.

Vegetation degradation

Natural vegetation can also be degraded. A natural ecosystem of plants can be changed in a number of ways. For example, vegetation can be affected by introduced plants. These can upset the natural balance of the ecosystem and spread uncontrollably.

Fires can also change the vegetation greatly. Although fire can be a natural part of the environment, it has

a major effect on some species. It can remove some species and encourage the growth of others.

Weed infestations often occur when vegetation is disturbed. Weeds are plants that have run wild and have taken over other species. Plants turn into weeds when they find conditions that are ideal, leading to their domination of an ecosystem.

Desertification

One of the most serious forms of land degradation in the world is **desertification**—the process by which productive land is turned into a desert through practices such as overstocking cattle and deforestation. Desertification is a problem in parts of Africa, where the desert is steadily advancing over what used to be good farming land.

Desertification in northern Africa has occurred on the edges of the Sahara. These marginal lands have variable rainfall and can only be used with great care. A mixture of overuse and periodic change in the rainfall has destroyed the productive ability of the land. The results are creeping desert sands and salty water holes.

Role of poverty

Land degradation is both a cause and a result of **poverty**, with one contributing to the other. In subsistence economies, where people depend on the land for food, land degradation can result in greater poverty and human suffering. Developing countries often have high rates of population growth. This places increased demands on the land, as the land must be used more intensively to feed the growing numbers. This increased intensity of landuse often exceeds the capacity of the land to cope. As a result, it becomes degraded. This means less productive land per person, leading to increased pressure on resources and even more land degradation.

Coastal degradation

The coastline is under constant attack from the natural forces of wind and waves. Because of this, the coastline is constantly changing: beaches and sand dunes erode and are rebuilt in response to wind attack, and sand dunes can migrate inland. Human activities along the coastline can increase the rate at which these changes occur. Coastal degradation is caused by inappropriate development and landuse management practices along the coastline. Coastal developments for tourism, residential, commercial and recreational purposes place pressure on coastal areas and may cause degradation.

The extent of this degradation is often related to population density. The distribution of the earth's population and the extent to which coastlines have been altered by the activities of humans are shown in Source 6.3.6. The most extensively altered coastal environments tend to be where population densities are greatest.

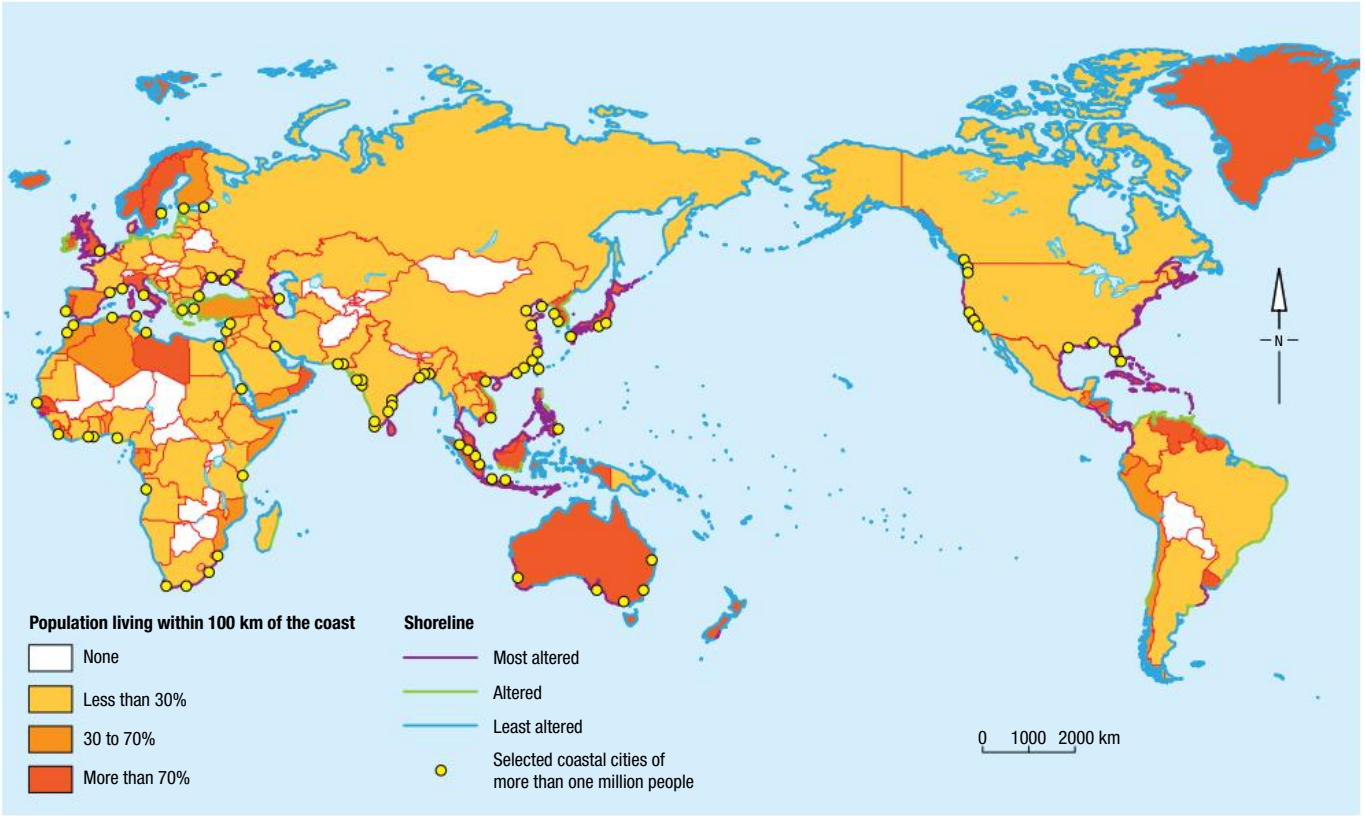
Fuelwood collection and the spread of deserts

The Food and Agriculture Organization (FAO) estimates that 40 per cent of the world's 7.4 billion people rely on fuelwood or charcoal (made from the partial burning of wood) as their primary source of energy for cooking and heating. This reliance is growing, as is the impact of its use on the environment. The consumption of fuelwood has increased 250 per cent since 1960, while the world's population has increased by only 90 per cent.

Because the collection of wood is time-consuming and often exhausting, people in developing countries tend to remove all suitable vegetation in increasingly wide areas around their villages. As a result, the collection of fuelwood and building materials is an important cause of deforestation, land degradation and desertification.

Source 6.3.5 More than 90 per cent of Haiti is now deforested, mainly because most of the eight million inhabitants use charcoal to cook.

Source 6.3.6 There is a close relationship between population density and the extent of human impact on coastlines.
World Resources Institute, 2006



ACTIVITIES

Remembering and understanding

1 Define the the term 'land degradation'.
2 Outline the causes of soil and vegetation degradation.
3 Outline the various types of soil degradation.
4 Define the term 'desertification'.
5 Explain how the collection of fuelwood contributes to the problem of desertification.

Applying and analysing

6 Study Source 6.3.1 then complete the following tasks.
   a With the aid of an atlas, identify, in general terms, those parts of the world with very degraded soils.
   b Which continent has the largest area of degraded land?
   c Which continent has the smallest area of degraded land?
7 Study Source 6.3.2. Identify the main causes of land degradation.
8 Study Source 6.3.6. Identify the regions of the world where the coasts have been most altered. Note the relationship between the level of alteration and population density.

Evaluating and creating

9 Investigate and evaluate the strategies used to fight land degradation in a selected country and location. Present your findings as an annotated visual display. Include in your display a map of the location being investigated.
10 Conduct a survey of the school grounds or an area nearby to evaluate the amount of land degradation.
   a Draw up a base map of the site.
   b Look for evidence of damage to soil: erosion, compaction, waterlogging and salinity.
   c Map the areas where nothing grows.
   d Map the areas of plants. If possible, label them as native or introduced.
   e Use this information to make a list of steps that could be taken to improve that particular area of land.

Exploited oceans

The earth is sometimes referred to as the 'blue planet'. This is because two-thirds of its surface is covered by water: its four great oceans and the smaller seas. People have used these oceans and seas for centuries, with little consideration of the long-term impact of their activities. Such indifference cannot continue. The wellbeing of the planet depends on the environmental functions performed by the oceans.

Human impacts on oceans

Some of the human impacts on oceans are:

- over-exploitation of the world's fisheries (see Source 6.4.1)
- dumping of toxic pollutants, and oil spills
- increased flow of nutrients (such as agricultural fertilisers and sewage)
- dumping of plastics and other solid wastes.

Harvesting the world's oceans

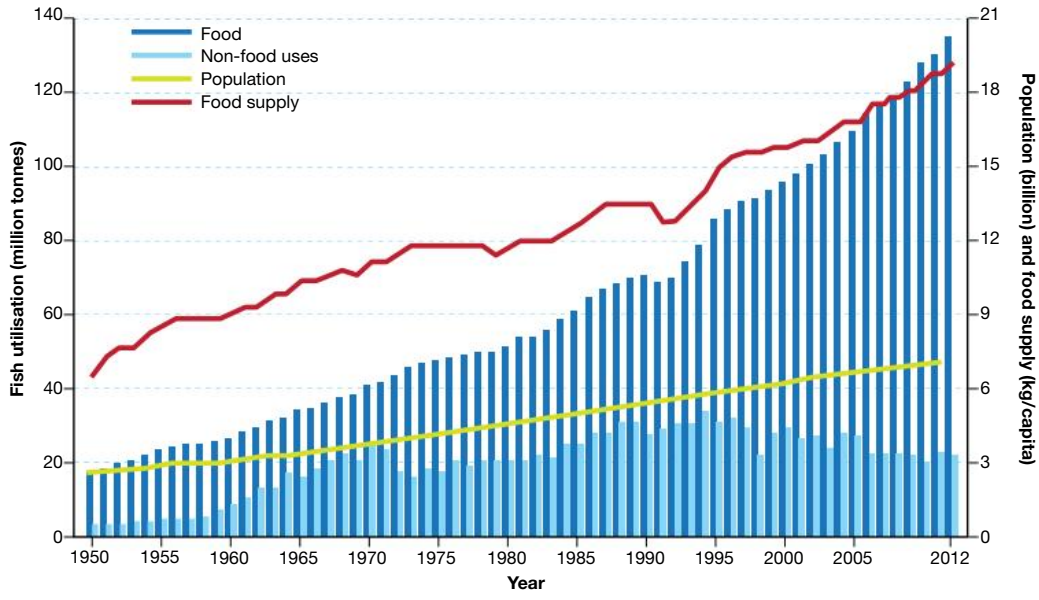
More than three million fishing vessels now sift the world's oceans for seafood. This is twice as many vessels as in 1970. In 2012, wild capture fisheries and aquaculture supplied the world with about 158 million tonnes of fish, and the fish export industry was worth more than $130 billion. Of this, 59.9 million tonnes were from aquaculture production, from both inland and marine waters. This total catch equates to about 19.2 kilograms a year for the average person. Global fish consumption per capita can be seen in Source 6.4.2.

Protection efforts

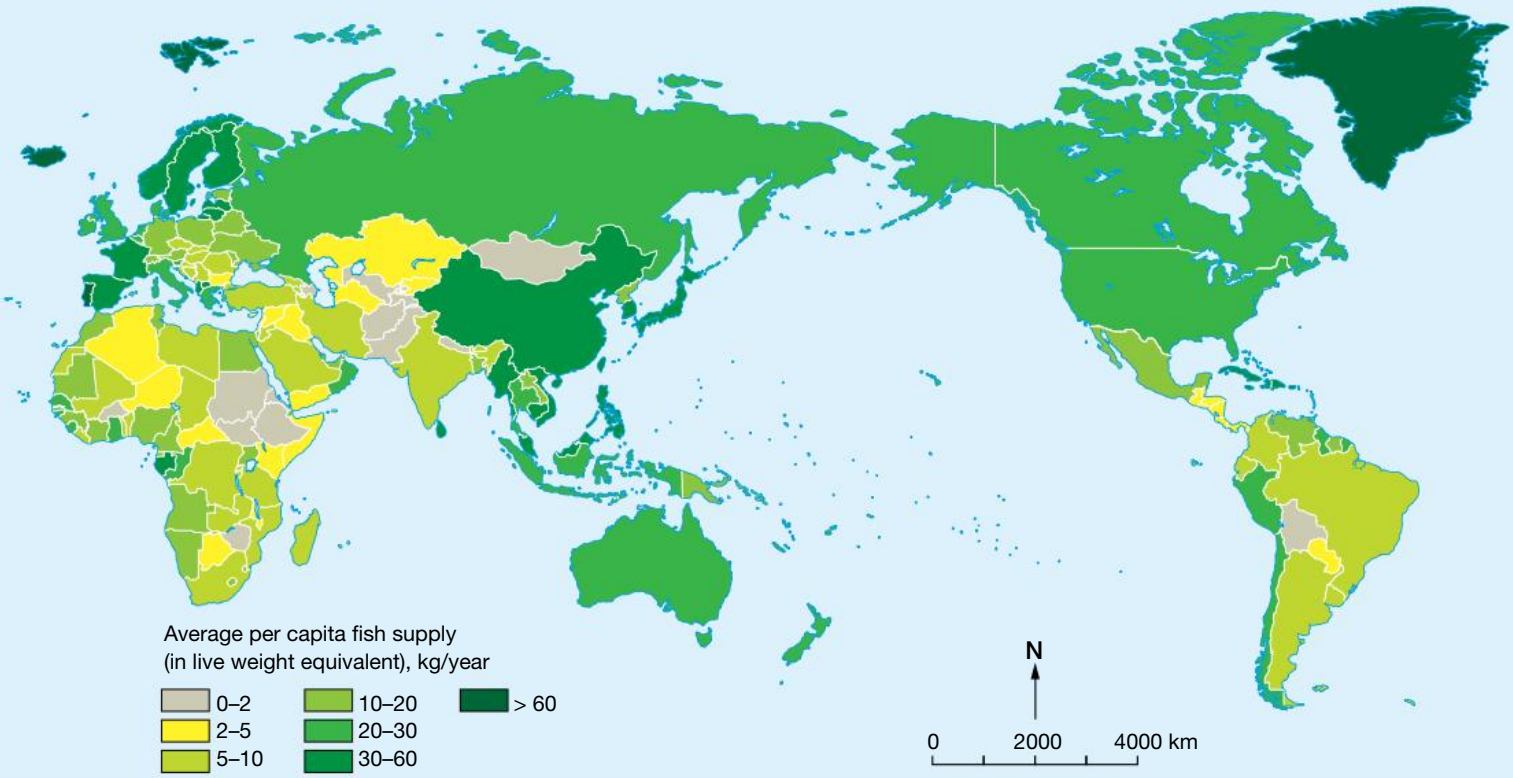
In an effort to protect their fishing grounds, many countries have extended their territorial control from 12 to 200 nautical miles (300 kilometres) beyond their coastline. As a result, nearly 40 per cent of the world's oceans have now been claimed as exclusive fishing zones by countries, which then restricts the access of foreign fleets to these waters.

In some regions, fish species have been exploited close to extinction. In other areas, fish yields are in serious decline. One such area is the Grand Banks of Newfoundland, Canada. In the mid-1990s, the Canadian Government became so concerned with the rate of decline that it banned fishing in the region. The impact on local communities was dramatic—40 000 people became unemployed. Despite this, distant-water trawlers operating out of Spain, Portugal and other countries continued to fish the edges of the Grand Banks just outside Canada's territorial waters.

Having reduced fish numbers in their own waters, many rich countries are now buying access to the waters of poorer countries. This disadvantages local



Source 6.4.1 World fish utilisation and supply. FAO, *State of the World's Fisheries and Aquaculture*, 2014



Source 6.4.2 Fish consumption per capita (average 2008–10). FAO, *State of the World's Fisheries and Aquaculture*, 2014

fishers, who are unable to afford the technology used by the larger foreign-owned factory ships, which process the catch on board. In the waters off Senegal in western Africa, for example, locals must now travel further and further to get the same catch. Large long-range trawlers from China, South Korea, Spain, Japan and France are depleting Senegal's local fish stocks.

International efforts to regulate the industry have not yet met with much success. As the oceans are so vast, it is difficult to make sure that operators comply with international agreements.

Employment in fisheries

In 2012, there were 58.3 million people engaged in the primary sector of capture fisheries and aquaculture. More than 84 per cent of all people employed in the fisheries sector were in Asia, followed by Africa (more than 10 per cent) and Latin America and the Caribbean (3.9 per cent).

ACTIVITIES

Remembering and understanding

1 Outline the actions countries have taken to protect their fishing zones.
2 Outline how people in developing countries have been affected by the growth of the fishing industry.
3 Explain why international efforts to regulate the industry have met with little success.

Applying and analysing

4 Study Source 6.4.1. Describe the trend in fish utilisation for food and non-food uses, 1950–2012. Compare this to the trends in world population and total food production.
5 Study Source 6.4.2.
   a Identify the parts of the world where fish consumption exceeds 20 kilograms per person per year. Which regions have the lowest level of fish consumption?
   b Compare the statistics related to employment in fisheries with average fish consumption.

Evaluating and creating

6 Create a mind map on the impacts of people on the world's oceans. What factor has had the greatest impact? Give reasons for your answer.

UNIT 6.5

World population growth

World population trends

In 2016, 7.4 billion people inhabited planet earth. By 2050, there will be 9.8 billion of us. At the beginning of the last century there were just 1.6 billion people. This rapid rise in human numbers is unprecedented and threatens the wellbeing of the environmental systems on which all life depends.

Source 6.5.1 shows the growth in the world's population since 1000 CE. The highest rates of world population growth occurred during the 1950s and 1960s. They peaked at 2.2 per cent in 1963, as illustrated in Source 6.5.2. Today, population growth is approximately 1.2 per cent per year and it is expected to decrease. Source 6.5.3 shows how long it has taken to add each additional billion to the world's population.

Source 6.5.1 World population growth rates, 1950–2100. Note that the 2100 population size is the United Nations' medium prediction. The low prediction is 9.5 billion and the high prediction is 13.3 billion. Population Reference Bureau, *2012 World Population Data Sheet*

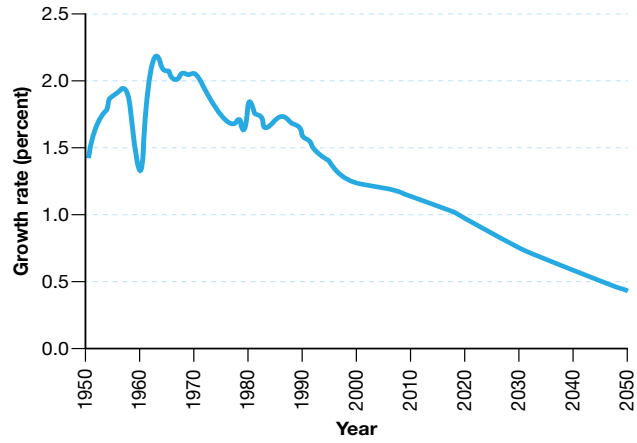
Year	Population (million)
1000	275
1100	306
1200	348
1300	384
1400	373
1500	429
1600	486
1700	635
1800	919
1900	1571
2000	6073
2100	11 213*

* UN estimate

Did you know?

The total number of humans who have ever lived is estimated to be more than 107 billion.

Source 6.5.2 World population growth rates, 1950–2050. US Census, 2015



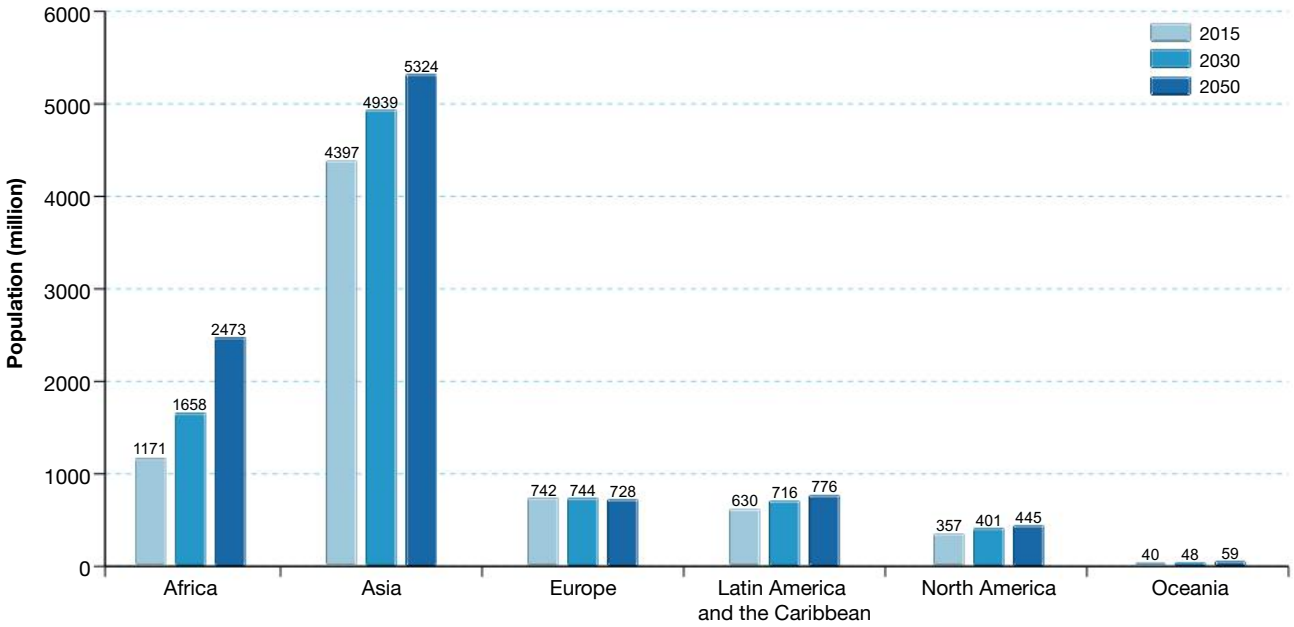
Source 6.5.3 How and when the billions have been added to the world population. Population Reference Bureau, *2012 World Population Data Sheet*

World population	When reached	How long did it take?
1 billion	About 1800	Since the beginning of humanity (2 million years)
2 billion	1930	130 years
3 billion	1960	30 years
4 billion	1974	14 years
5 billion	1987	13 years
6 billion	1999	12 years
7 billion	2011	12 years

Demographers predict that the earth's population will grow until a fall in fertility rates brings about a gradual decline in population in the latter part of this century. The population of the world's developed regions will remain largely unchanged at around 1.3 billion between 2015 and 2050. In contrast, the population of the 49 least developed countries is projected to double from around 938 million people in 2015 to 1.887 billion by 2050. Population growth will be greatest in Africa. Source 6.5.4 shows projected world population growth by region in 2015, 2030 and 2050.

Improving the wellbeing of people in developing countries is, not surprisingly, a major challenge facing humanity. Unless economic growth occurs at a rate faster than population growth, people will get a small share of the 'economic pie'.

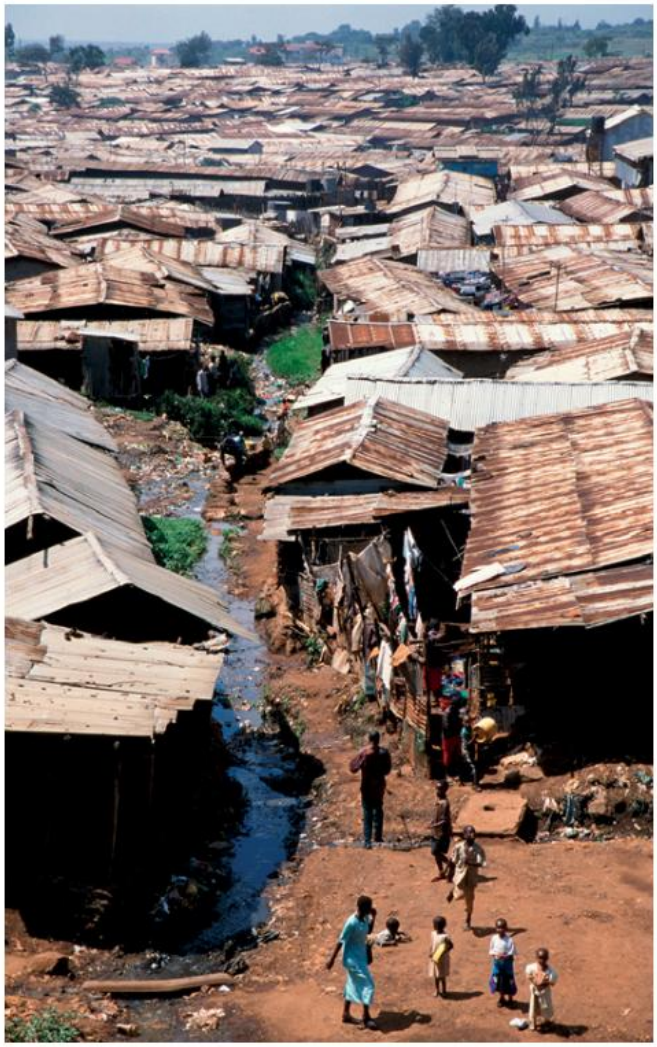
Source 6.5.4 Current and projected world population growth by region, 2015, 2030 and 2050. Population Reference Bureau, *2015 World Population Data Sheet*



Consequences of rapid population growth

Many people around the world are inadequately fed, housed, educated and employed. Billions of people live in conditions that Australians would find intolerable, as shown in Source 6.5.5.

The problem with population growth is the material demands of the population, especially those living in the developed world. Over one billion people enjoy a lifestyle that imposes a disproportionate demand on our planetary ecosystems. This consumerism is powered by a sudden expansion in our technological capabilities that has enabled us to use (and sometimes misuse) natural resources. Our massive demand for the energy from fossil fuels, for example, is altering the composition of the earth's atmosphere. The resulting climate change endangers whole ecosystems and perhaps humanity itself. Humanity has, however, confronted such challenges before. In recent times it has successfully addressed the issues of acid rain and ozone depletion. Collectively, we can reduce our environmental footprint by limiting our consumption of fossil fuels and by developing alternative (renewable) sources of energy. Humanity has the ability to confront such issues. It also has the ability to address issues of global inequality.



Source 6.5.5 Nairobi's Kibera slum. Meeting the needs of people living in the world's cities is a major challenge.

Pressures on biodiversity

As the world's population grows, so does the demand for food, clothing and shelter. As a result, whole habitats are lost to supply this demand and **biodiversity** in many areas has been destroyed destroyed. While some species are already **extinct**, a growing number of species are classified as endangered, vulnerable or threatened.

Levels of threat

The International Union for Conservation and Nature (IUCN) classifies the threat to species on a five-level scale, from threatened to extinct:

- ***extinct:*** not seen in the wild for the last 50 years
- ***extinct in the wild:*** found only in captivity (that is, in zoological gardens or seed banks)
- ***critically endangered:*** considered to be facing an extremely high risk of extinction in the wild
- ***endangered:*** considered to be facing a very high risk of extinction in the wild
- ***vulnerable:*** considered to be facing a high risk of extinction in the wild
- ***threatened:*** close to qualifying for the endangered or vulnerable categories in the near future.

The 2015 Red List, which sets out the status of 79 837 species, lists 23 250 species as threatened. Under threat are 41 per cent of amphibian species, 40 per cent of gymnosperm plants (plants that have exposed seeds), 26 per cent of mammals and 13 per cent of birds.

Causes of biodiversity loss

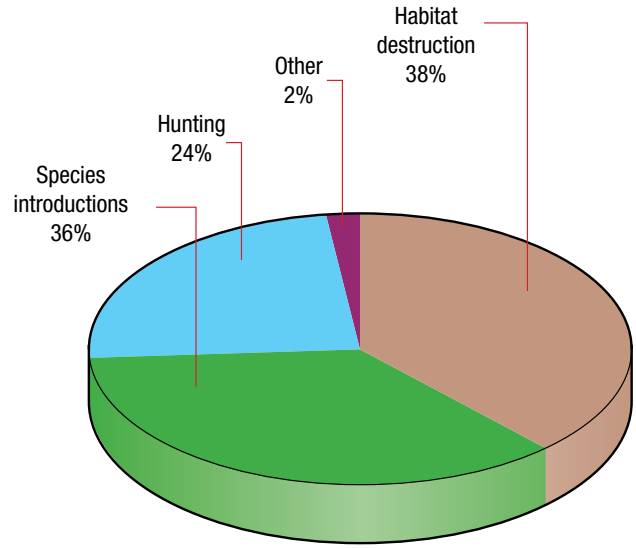
Habitat loss and degradation

The main reason that so many species have become endangered or extinct in the past hundred years is loss of habitat. The clearing of land for housing, logging and farming is the main cause of this habitat destruction. The known causes of animal extinctions are shown in Source 6.5.6.

Introduced species

Introduced species of plants and animals can be an important factor in the decline of established native species. Rabbits, foxes, camels, goats, cane toads, cats, blackberry and prickly pear are some of the introduced species that have gone feral in Australia. They compete with native species and often eliminate them from wide areas. Many small species, such as the short-tailed hopping mouse and the numbat, have become endangered because they are hunted by introduced species.

Source 6.5.6 Known causes of animal extinctions. Habit destruction is the main cause of species loss.



Source 6.5.7 Australia's Leadbeater's possum is critically endangered. Threats to the species include the destruction of habitat by logging and wildfires.

Hunting (over-exploitation)

Over-exploitation is a significant cause of species loss and endangerment. Animals are hunted for food and skins. In the Caspian Sea, fishing for the highly valued beluga sturgeon's eggs, used to make caviar, has pushed the fish species close to extinction.

Disease

The emergence of infectious diseases in free-living wild animals is a growing threat to biodiversity. It is likely that other factors (for example pollution) have increased the exposure of some species to disease. In Tasmania, the state's population of the Tasmanian devils has, since the late 1990s, been affected by a facial tumour disease. This disease has reduced the devil population significantly and now threatens the survival of the species. The cancer's origin is a mystery, but studies indicate that the animals pass it on from one to another (it is contagious).

Pollution

Many of the pollutants released into the environment by human activities have significant, large-scale impacts on the world's terrestrial and aquatic ecosystems. Acid precipitation, for example, has had a significant impact on the forests of Europe and North America, and industrial pollutants such as DDT are known to have caused significant declines in populations of many bird species, including the peregrine falcon and bald eagle. Toxic pollutants enter the food chain, causing birth defects and, in some cases, death.

Climate change

Global warming has the potential to transform ecosystems. These transformations will affect the community of plants and animals within ecosystems. Rises in sea temperature and the acidification of oceans, for example, may cause whole reefs to die.

Other causes

The impacts of tourism, natural disasters, urban development, tourism and the illegal trade in wildlife and animal-based products are also seen as threats to biodiversity.

Consequences of species loss

All species are part of different ecosystems and a full variety of life forms—that is, biological diversity—in ecosystems allows these ecosystems to function better. They can purify water, maintain the quality of the air we breathe, recycle nutrients and waste, provide food and shelter for other species and keep the population of some species from dominating an area or environment.

Plants and animals also supply many of the medicines that are used to cure human diseases. The medical potential of many species is yet to be fully realised.

ACTIVITIES

Remembering and understanding

1 Explain why the increasing material demands of a growing world population are a problem.
2 Define the terms 'habitat' and 'biodiversity'.
3 Outline the main causes of habitat destruction and species loss.
4 Outline the impact that introduced species can have on established native species.
5 Explain why we should be concerned about the loss of species.

Applying and analysing

6 Study Source 6.5.1. Construct a semi-logarithmic graph showing the growth of the world's population (actual and projected) between 1000 and 2100 (Hint: use a scale of 10 million, 100 million, 1 billion, 10 billion and 100 billion.) In which period did the world's population grow most rapidly?
7 Study Source 6.5.2. Using data from the graph, describe the trend in world population growth rates.
8 Study Source 6.5.3. Outline the trend apparent in the time it takes for the world to add each additional billion people to its population.
9 Study Source 6.5.4. Identify the regions of the world projected to have the most rapid increases in population growth between 2012 and 2050. Which region will have the slowest growth? What are the implications of these trends?
10 Create a concept map outlining the links between world population growth, pressures on biodiversity and consequences of habitat destruction and species loss.

Evaluating and creating

11 Investigate one critically endangered species further. Research the threats to the species and ideas on how to reduce these threats. Discuss your opinion on these measures, justifying your stance.

Our warming planet

Climate change

Life has existed on earth for nearly four billion years. During this time, the climate of the planet has undergone great change, from ice ages lasting tens of thousands of years to long periods of steamy heat. With each change, some species of plants and animals flourished, others adapted and some became extinct.

During the past century, increasing levels of greenhouse gases such as carbon dioxide (CO_2) have trapped enough heat in the atmosphere to raise the average temperatures by half a degree Celsius. If present trends continue, the earth's climate could be significantly altered, with melting glaciers, rising sea levels, increasing rates of desertification and shifting vegetation zones.

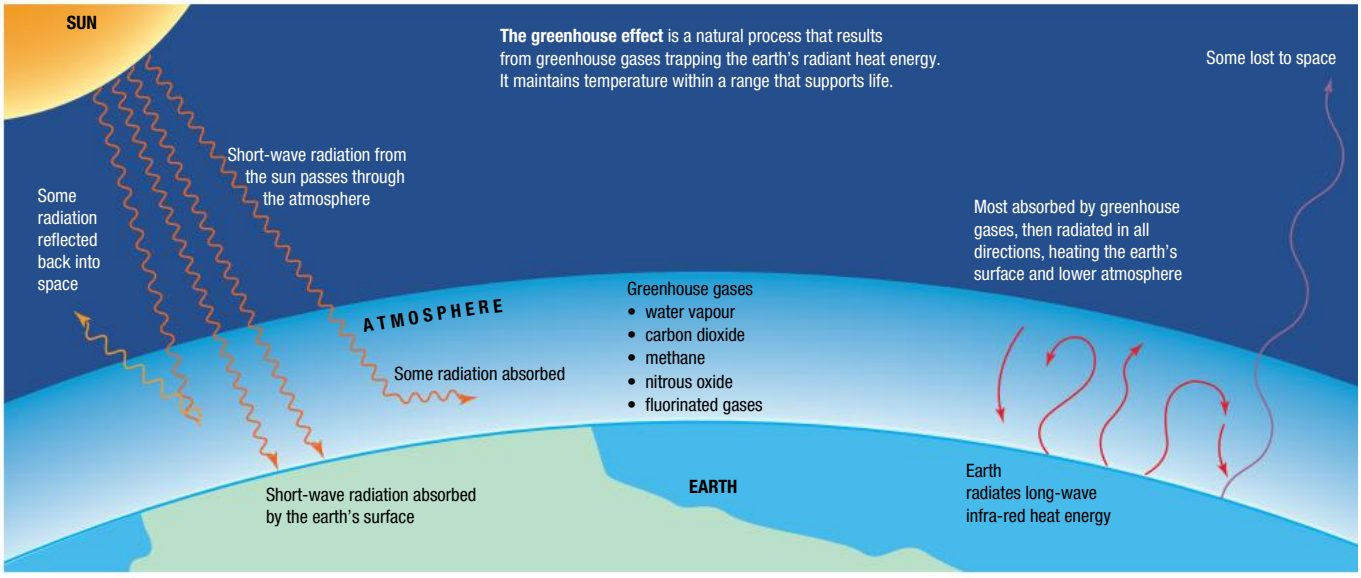
Global warming

The main cause of climate change is global warming: the gradual rise in average temperatures brought about by an increase in the heat-absorbing gases present in the atmosphere. The gases that make up the earth's atmosphere help trap and retain some of the heat radiated from the earth's surface. Without the atmosphere, the earth's surface temperature would average about –18°C instead of the present 15°C.

The atmosphere reflects only a fraction of the sun's energy (heat) straight back into space. The rest is trapped in the lower layers of the atmosphere, which contain various gases that absorb the heat and then radiate it back towards the earth's surface. This process is known as the natural **greenhouse effect** because it is similar to what happens in a greenhouse, or glasshouse, as shown in Source 6.6.1. The natural greenhouse effect raises the average temperature of the earth by about 33°C (that is, from –18°C to +15°C).

The most important greenhouse gases are water vapour, CO_2, methane, nitrous oxide and fluorinated gases. Water vapour is the most important of these gases, because it is able to absorb large amounts of heat. Humans have very little direct control over the volume of water in the atmosphere but they do influence the levels of CO_2, methane and fluorinated gases in the atmosphere. These, in turn, intensify the effect of the water vapour. The hotter the atmosphere gets, the more water vapour it can hold, thereby increasing the amount of heat trapped. This is called the enhanced greenhouse effect, which is thought to be the main cause of global warming (see Source 6.6.2).

Source 6.6.2, which outlines the impacts of selected gases, shows that carbon dioxide is the largest contributor to the accelerated greenhouse effect. Source 6.6.3 shows carbon dioxide emissions per capita. Estimating the actual rate of global warming is made difficult by the natural variability of the climate from place to place and from time to time. There are also other

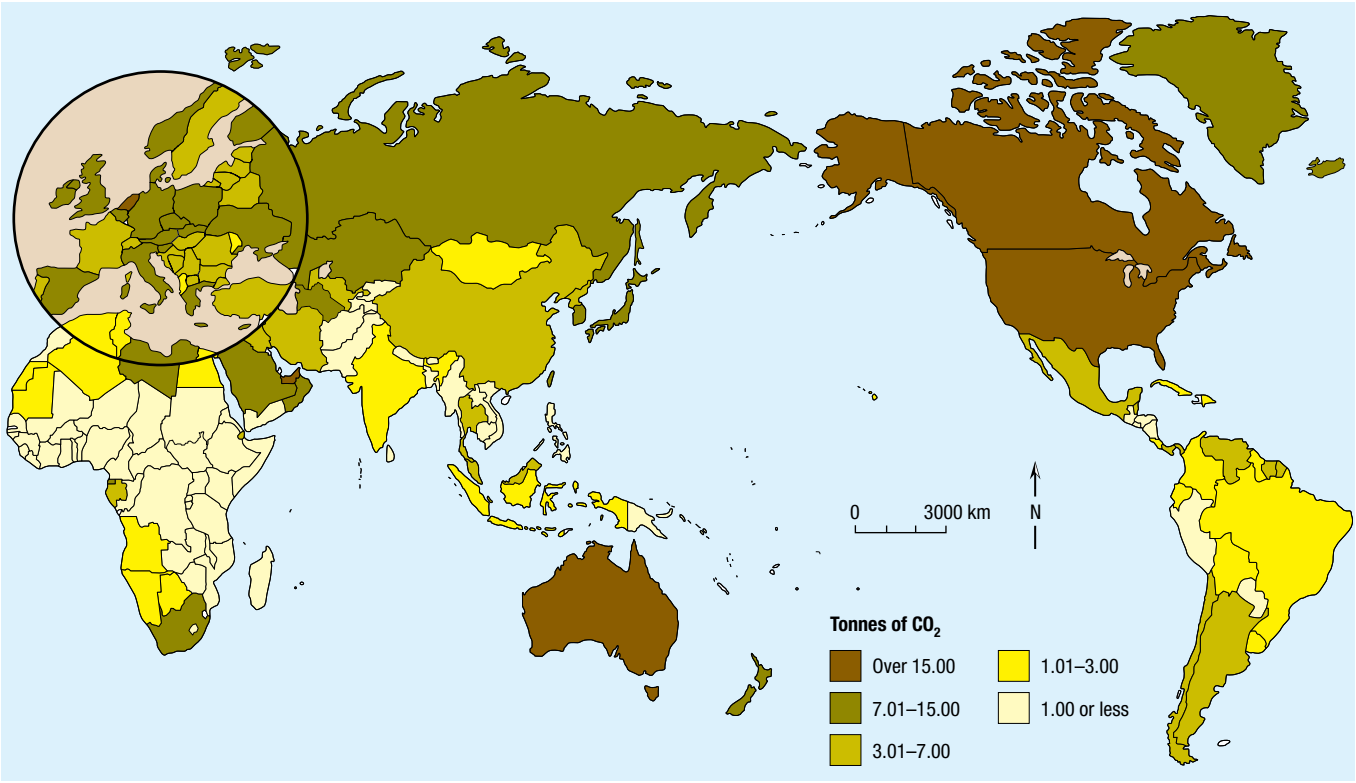


Source 6.6.1 The natural greenhouse effect

unknown factors that might significantly influence global temperatures, such as the role of the oceans. The ability of a large body of water to retain its present temperature for a long time might slow the atmospheric temperature rise for some time. Because so little is known of this effect, it is difficult to predict accurately the rate at which temperatures will increase.

Source 6.6.2 The contribution of selected gases to the greenhouse effect

Greenhouse gas	Natural origins	Human sources	Changes and impacts
Carbon dioxide 82%	• Volcanic eruptions • Naturally occurring fires • Respiration by plants and animals	• Deforestation • Burning fossil fuels (coal, oil and natural gas)	• Current concentrations are more than 30 per cent greater than before the Industrial Revolution (1760–1840). Thought to account for 60 per cent of the warming observed since 1850
Methane 9%	• Decomposing plant and animal matter • Releases from geological deposits • Wetlands	• Ruminant animals, including cattle and sheep • Rice paddies • Landfill sites • Burning of fossil fuels	• There is now two and a half times more methane in the atmosphere than there was in the 18th century. Methane accounts for about 15 per cent of global warming.
Nitrous oxide 6%	• Natural atmospheric gas	• Burning vegetation • Chemical fertilisers • Burning fossil fuels • Industrial emissions	• The supply of nitrous oxides has increased by 15 per cent since 1800
Fluorinated gases 3%	• No natural sources	• Emissions from a range of industrial processes such as aluminium and semiconductor manufacturing	• Small atmospheric concentrations can have large effects on global temperatures. They are the most potent and long-lasting of the gases emitted by human activity.



Source 6.6.3 Global per capita CO_2 emissions. People living in developed countries are the largest CO_2 emitters.
World Bank, 2013

Impacts of climate change

Now that scientists have accurately recorded the increasing concentrations of greenhouse gases in the atmosphere, they are turning their attention to the long-term impact of these gases on climate. Most scientists agree that the average temperature of the lower atmosphere will increase by between 1°C and 3.5°C over the next century. This increase is likely to affect environments and communities all over the world.

Temperatures

The predicted increase will produce temperatures that were last experienced 100 000 years ago. Any increase will not be even across the globe (see Source 6.6.4). Continental landmasses are likely to experience a greater temperature increase than ocean areas, because land absorbs heat faster than the sea. There is likely to be a greater temperature increase in regions in the high latitudes (that is, nearer to the poles) than near the Equator. Heatwaves are also likely to become more frequent and last longer.

Rainfall

Higher temperatures will result in much more water vapour in the air: about 6 per cent more for every 1°C increase in temperature. In some places, this will mean more intense rainfall and flooding. Increases in sea and land temperatures will produce complex changes in wind and precipitation patterns.

Storm patterns

The combination of increased sea and air temperatures will affect the storm belts (areas of frequent storm activity) across the globe. At present, tropical cyclones are confined to latitudes 8–25° north and south of the Equator, where water temperatures are high enough to support the evaporation rate necessary for storms to form. With global warming, the storm belts will spread from the Equator. As a result, places on the same latitude as Brisbane (27°S) could regularly experience tropical cyclones; they are presently out of range.

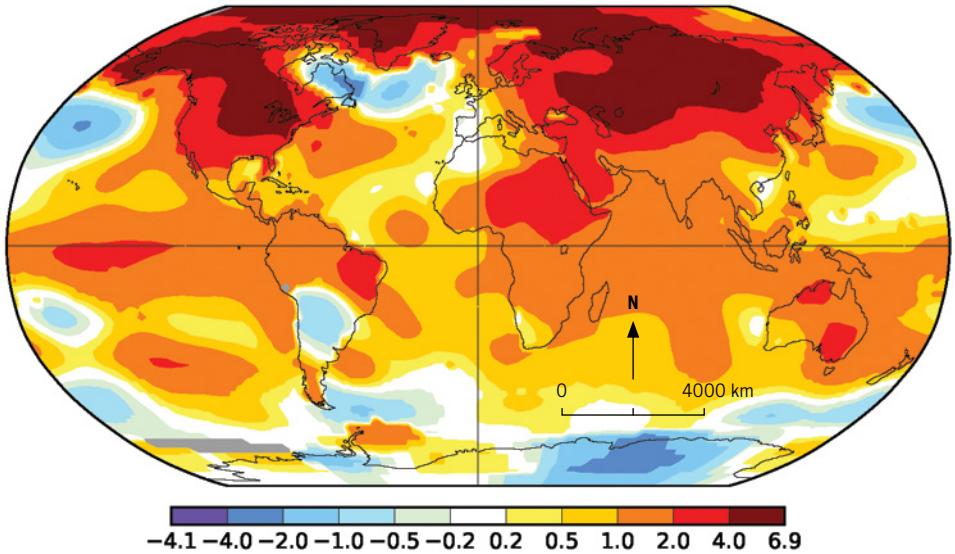
The warmer oceans will also create more intense storms.

Melting ice sheets and glaciers

Scientists have recorded the retreat of the world's glaciers over the last century. There is growing evidence that the ice shelves surrounding Antarctica are beginning to break up and melt.

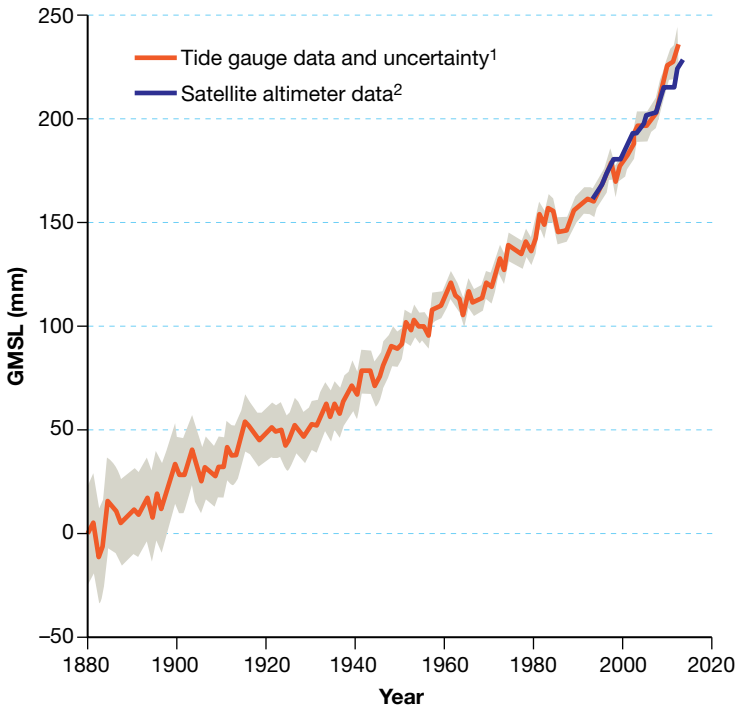
Changes in sea levels

Rising sea levels could have an impact on coastal communities. It is predicted the polar regions will experience the greatest warming. If these predictions are correct, the melting of polar ice caps could be so great that it would add a significant amount of water to the oceans. In addition, because water expands as it warms, sea levels rise further. Average sea levels have risen by 10–25 centimetres during the 20th century (see Source 6.6.5).



Source 6.6.4 Mean global temperatures in February 2016, compared with the May average for 1951–80. Parts of the planet show clear signs of warming. NASA

Source 6.6.5 Changes in sea level, 1880–2014. Sea levels have risen about 20 centimetres over the last 100 years. CSIRO 2014



THERMAL EXPANSION

There are three processes that contribute to sea-level rise. All bodies expand when they are heated, and this is true for the water that covers 70 per cent of the planet. The oceans are expanding—upwards. It is estimated that this expansion will raise levels by 10 to 40 centimetres over the course of the century.

MELTING GLACIERS AND MOUNTAIN ICE CAPS

Melting glaciers and mountain ice caps (outside Greenland and Antarctica) are adding water to rivers that flow to the oceans. However, these remain a modest source of sea-level rise—possibly around 10 centimetres.

MELTING ICE SHEETS

The Greenland and Antarctic ice sheets represent vast reserves of frozen fresh water. The former would add 7 metres to sea levels if melted completely; the latter would bring a further 60-metre rise to the levels of the world's oceans.

ACTIVITIES

Remembering and understanding

1 Explain what global warming is.
2 Explain how human activity has increased the effectiveness or intensity of the greenhouse effect.
3 Outline the factors that make it difficult to estimate the actual rate of temperature increase.
4 Explain how global warming will affect the world's climate.
5 Explain why sea levels will rise.

Applying and analysing

6 Study Source 6.6.3. With the aid of an atlas, do the following tasks.
  a Identify the countries with CO_2 emissions greater than 15 tonnes per capita.
  b Identify the regions of the world with annual CO_2 emissions of less than 1 tonne per capita.
  c Using your knowledge of global inequalities, comment on the relationship between CO_2 emissions and the level of economic development.
7 Study Source 6.6.4. Identify the parts of the world that showed the greatest temperature anomaly (both positive and negative) in 2016 compared with the average for 1951–80.

Evaluating and creating

8 In 2012, President Barack Obama said: 'We must respond to the threat of climate change, knowing that the failure to do so would betray our children and future generations. Some may still deny the overwhelming judgement of science, but none can avoid the devastating impact of raging fires and crippling drought and more powerful storms.' Write a short response to his statement.

UNIT 6.7

Environmental worldviews

People disagree about the severity of environmental problems. As a result, they hold diverse attitudes and approaches towards environmental management. These differences arise mostly from conflicting environmental worldviews, as there are many ways of looking at nature and the relationship of humans to it. These worldviews often differ on the issue of what is more important, humans or nature.

Role of environmental worldviews

A worldview is essentially a perspective or point of view held by an individual based on a set of values and assumptions. When it is accepted and shared by many, it becomes a belief system. An environmental worldview is concerned with nature and how the earth and all its species and resources are managed. It has an ethical dimension as it shapes what individuals believe is right or wrong about their behaviour in relation to the environment.

Source 6.7.1 Some important ethical questions relating to the environment. G. Tyler Miller & S. Spoolman, *Living in the Environment*, Brooks Cole, Belmont, 2012

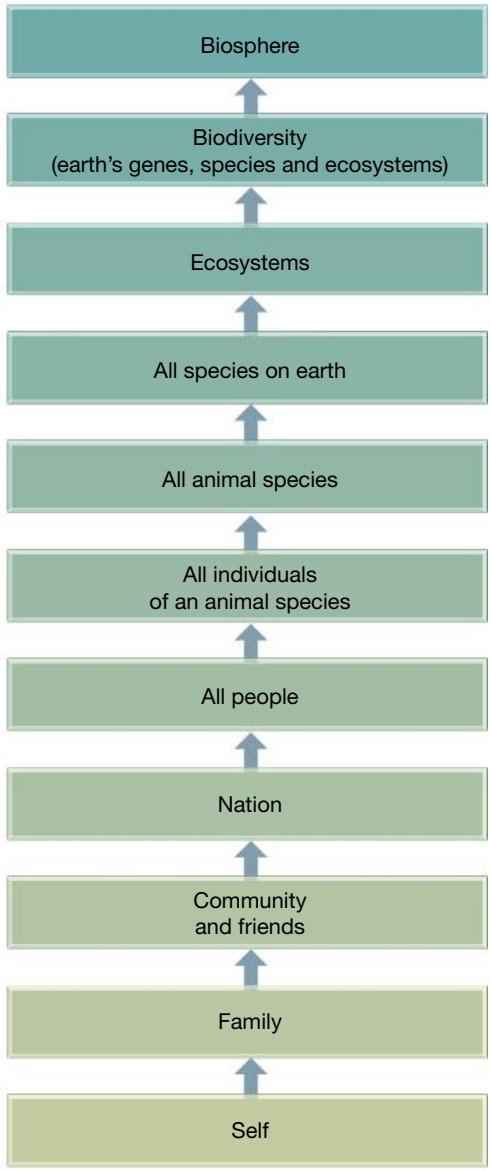
1. Why should we care about the environment?
2. Are we the most important beings on the planet or are we just one of the earth's millions of different life forms?
3. Do we have an obligation to see that our activities do not cause the extinction of other species? Should we try to protect all species or only some? How do we decide which ones to protect?
4. Do we have an ethical obligation to pass the natural world onto future generations in at least as good a condition as we inherited?
5. Should every person be entitled to equal protection from environmental hazards regardless of race, gender, age, national origin, income, social class, or any other factor?
6. How do we promote sustainability?

A person's environmental worldview is shaped by their perceptions of:

- how the world works
- what an individual's role in the world should be
- what is correct environmental behaviour.

Sources 6.7.1 and 6.7.2 list ethical questions and concerns in relation to the environment that will help develop a person's worldview.

Source 6.7.2 Levels of ethical concern. People disagree about how far we should extend our level of ethical concern. G. Tyler Miller & S. Spoolman, *Living in the Environment*, Brooks Cole, Belmont, 2012



Taking the time to consider your environmental worldview enables you to have a deeper appreciation of your place in the environment and the implications of your decisions and actions. Your chosen environmental worldview shapes your behaviour and lifestyle choices. It also defines the boundaries of your actions and your readiness to take a stance on environmental issues.

Conflicting environmental worldviews

There are different ways of looking at nature and how humans relate to it. It is not surprising that most people hold worldviews that are human-centred, as the focus of their world is their own wellbeing. Major environmental worldviews differ in what is more significant—providing for the human population or guarding the natural world from exploitation and degradation to ensure the health of ecosystems and the biosphere. Each worldview implies very different approaches to what are considered appropriate responsibilities towards the environment (see Source 6.7.3).

Human-centred worldview

According to this worldview, humans are superior and the most important species on earth. Humans are considered to be apart from the rest of nature, and the value of other species and indeed the natural world is based on how useful they are to humans. As the dominant species, humans have unrestricted use of natural resources for their benefit alone. The belief underlying this worldview is that humans have an obligation only to themselves.

People with this worldview believe that what separates humans from other species is their intelligence. They have developed technologies to exploit resources and draw on the earth's life support systems for their own purposes. The human-centred worldview measures success in terms of how well humans control nature to meet their ever-increasing needs and wants. Such beliefs have long been evident in human civilisations and have driven the pursuit of economic growth in the western industrialised nations of the modern world. Through research and development, new technologies have evolved to exert even greater control over natural processes and extract resources to support ever-growing economies.

In the human-centred worldview, all economic growth is good and there is almost unlimited potential for it to continue. This is based on the assumption that human ingenuity and technology will ensure that any shortages or problems can be overcome. The emphasis in modern economies has usually been on short-term efficiency and profits, with no regard for any long-term costs associated with environmental damage.

Stewardship worldview

This worldview has been held by indigenous peoples for thousands of years. Their strong spiritual connection with the natural world is ingrained in their daily lives. While they use resources to support themselves, they have an intimate knowledge and appreciation of their environment and act responsibly to ensure its continuing productivity. They are thoughtful managers or stewards of the natural world.

In modern times, individuals with a stewardship worldview accept the responsibility to be caring managers of the earth. They believe that they may use the available resources, but that this must be done in a sustainable way to ensure the availability of resources for future generations. Any form of economic growth and development that damages the environment is discouraged.

People with this worldview believe that they have an ethical responsibility to ensure that they leave the earth in a condition that is comparable to the one they inherited. This is because the earth and its resources are really being borrowed from future generations.

Earth-centred worldview

People with this worldview believe that nature exists for all species on earth, not just humans, and that humans are equal to other species, not superior. All forms of life have a value, regardless of their actual or potential use to humans.

The extent to which people are prepared to protect the natural world depends on the depth of their beliefs. Individuals with an earth-centred worldview believe that protection should go well beyond species protection and encompass the entire natural world. They believe that humans are part of, and entirely dependent on, nature, and that nature exists for all species. So they advocate sustainability, which includes protecting the earth's biodiversity and the maintenance of its life support systems for all forms of life. Preventing the depletion of the natural world by ensuring ecological sustainability not only keeps other species alive, it also ensures the survival of humans as a species.

The Deep Ecology movement goes even further. Supporters of this movement believe that present human intrusion into the natural world is excessive. This follows from a conviction that each life form is significant, and the fundamental interdependence of diverse life forms underpins the richness of the natural world. Supporters of the Deep Ecology movement claim that all forms of life have the right to exist. As humans are no different from any other species, they have no right to interfere with nature.

Responding to environmental change

People have long held differing views on the environment. The stewardship worldview shaped the actions of indigenous people for thousands of years. With the emergence of civilisation and the voyages of exploration and subsequent colonisation, the human-centred worldview took over. As new frontiers were established, the wilderness was seen as something to be tamed and conquered so that it could be used by to humans and yield valuable resources. Even then, though, there were individuals who cherished the natural world and worked to protect it.

It is clear that there are extremes in the environmental worldviews held today. While many people may not fully embrace particular environmental worldviews, it is evident that there are differences in people's views about the causes of environmental issues in Australia and across the world. Individuals' differing perceptions of the seriousness of environmental problems and what should be done about them present a challenge. With no consensus, it is difficult to develop and implement strategies to deal with the problems, which then become even worse and harder to solve.

Different views on climate change

The issue of climate change provokes more argument than any other environmental issue, yet it could well have the most profound impacts on the quality of our life in the future. Despite the overwhelming majority of scientists stating that climate change is real and becoming significantly worse because of greenhouse gas emissions, there are people who deny the severity of the problem.

Freeman Dyson, Professor at the Institute for Advanced Studies, Princeton University, United States, believes that:

Climate change is a real problem, partly caused by human activities, but its importance has been grossly exaggerated. We do not know whether the observed climate changes are on balance good or bad for the health of the biosphere. And the effects of atmospheric carbon dioxide as a fertiliser of plant growth are at least as important as its effects on climate.

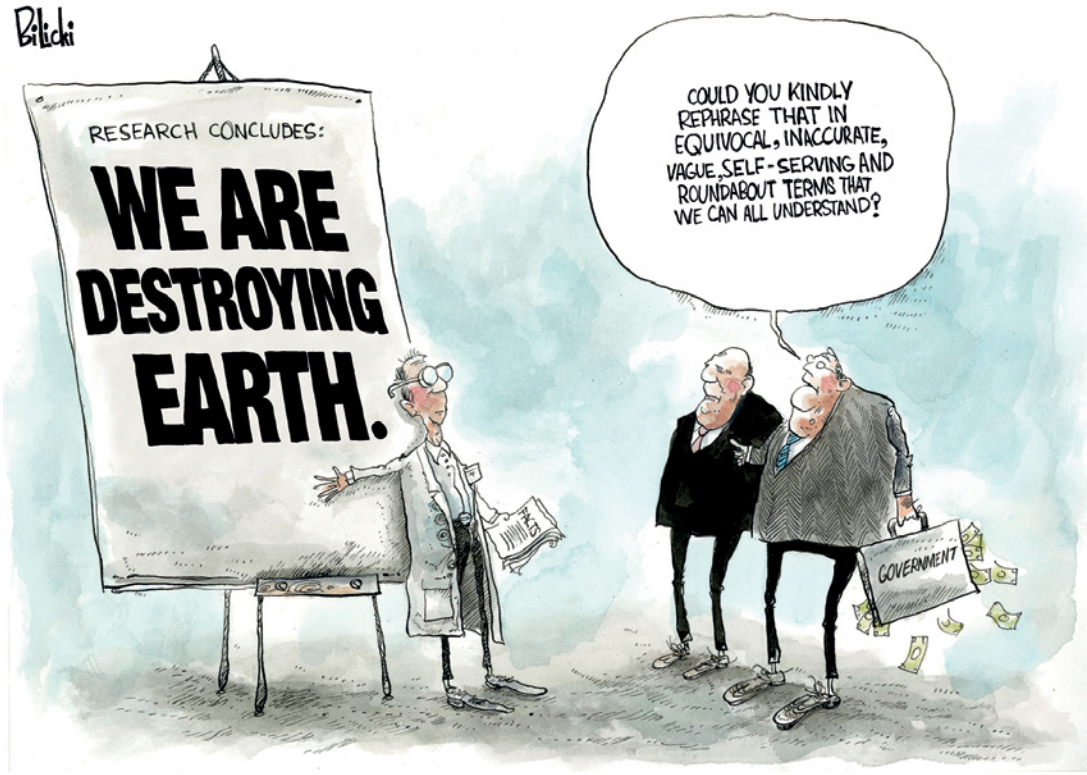
Jim Hansen, Director at NASA's Goddard Institute for Space Studies, United States, believes that:

The argument about whether or not there is global warming is over. It is now clear that we have been in a strong global warming trend at a rate of 0.3°C per decade for the past 30 years, meaning there has been a 0.56°C global warming in that period. The earth is now at its warmest level in the period of instrumental data; that is, since the late 1800s.

Different views on solutions

Climate change is a global problem with global consequences and it needs a global solution and international cooperation. There are differences in the willingness of countries to reduce their emissions, as some consider that this might stifle their economic growth and development (see Source 6.7.3). There are people who believe that carbon sequestration is the answer. Carbon sequestration involves the capture and long-term storage of carbon dioxide. One way of doing this is geosequestration, whereby excessive carbon dioxide is buried deep beneath the earth in depleted gas or oil wells. There are concerns, though, that the carbon dioxide might leak out, especially if there is unexpected seismic activity.

Lowering greenhouse gas emissions is considered essential to mitigate human-induced climate change. Households and businesses should explore opportunities to increase their energy efficiency and reduce emissions. Governments and corporations need to invest in developing and commercialising clean energy technologies to reduce carbon pollution.



Source 6.7.3 Cartoon by Justin Bilicki, illustrating that the findings of research are not always accepted and acted upon

ACTIVITIES

Remembering and understanding

1 Define the terms 'worldview' and 'environmental worldview'.
2 Describe what shapes an individual's environmental worldview.
3 Identify three major environmental worldviews and consider how they differ in the relative importance placed on humans and the environment. List three key ideas relating to each worldview.
4 Define the term 'geosequestration'.
5 Explain why some nations are reluctant to reduce their emissions.

Applying and analysing

6 Explain why it is important for individuals to consider their own worldviews.
7 Study Source 6.7.2. How far up the scale would you extend your own ethical concern? Explain your choice.
8 Build your ecological identity or worldview by answering the following questions:
   a Where do all the things I use and depend on come from?
   b Where do all my waste products go?
   c What do I know about the environment I live in?
   d How am I connected to the natural world and other living organisms?
   e What is my purpose in life?
   f What is my responsibility as a human being living on this planet?
9 Consider the three major environmental worldviews. Which fits most closely with your thoughts? Which of these is the best fit with your parents' worldview?

Evaluating and creating

10 Many people consider that applying the precautionary principle is especially important when tackling climate change. Justify this position.
11 'It is widely accepted that humans do have an ethical responsibility to avoid being the cause of the premature extinction of species through their actions.' To what extent do you agree with this statement? Discuss.

Inquiry tasks

Showing environmental changes on a global scale

Environmental change is any alteration to an environment that disturbs natural ecological processes. Working in groups of three or four, your task is to develop an annotated graphic display entitled 'Environmental change in the world'.

1. Paste a black outline map of the world in the centre of a piece of poster paper.
2. Source visuals that show environmental change in the world and draw lines to show the locations of these places on the world map.
3. Describe the type of change shown in the visuals and predict whether these will have positive or negative impacts upon people or the biophysical environment.
4. Develop an oral presentation of your findings to share with the rest of the class.

Researching a point source of pollution

Pollution is any hazardous or potentially hazardous substance released into the environment. It can affect people's wellbeing and the ability of the environment to provide environmental services. Your task is to write a 500–600-word research report describing one type of pollution and the strategies that could be put in place to reduce the impact of that pollutant on people and/or the biophysical environment. Your report should include maps, graphs and diagrams.

You can choose from the following types of pollution:

- air pollution and the contribution of:
  - sulfur dioxide
  - particulate matter
  - nitrogen oxide
  - carbon monoxide
  - lead
- water pollution and the contribution of:
  - agricultural run-off with residues from fertilisers, pesticides, herbicides or weedicides
  - industrial sources of water pollution
  - urban run-off
  - coal seam gas exploration and the fracturing of bedrock
- solid water pollution and the contribution of:
  - excessive packaging of consumer items
  - industry
  - e-waste
  - plastic waste
  - microplastics and microbeads
- toxic wastes and the contribution of:
  - mercury
  - cadmium
  - lead.

Make sure your report has a bibliography, including internet sources, their URLs and the date when the sites were accessed.

Land degradation on a global scale

Land degradation is the downgrading of land so that it is not as productive as it once was. If land is degraded, it loses its ability to produce the quality of vegetation or crops that it once did. Land degradation is one of the most important environmental problems in the world because it is so widespread and so difficult to reverse. Work in groups of four to complete the following task:

1. Investigate one of the following examples of land degradation:
   - salinity in the Murray–Darling Basin of Australia
   - rainforest clearance in the Amazon Basin of South America or Indonesia
   - desertification in the Sahel region of sub-Saharan Africa
   - the creation of the Dust Bowl in the United States in the 1930s
   - land degradation in the Owens Valley of south-western United States
   - human impact on the Aral Sea region of Central Asia.

2 Develop an annotated visual display on the selected region including the following information:

- a title
- two maps—one showing the location of the case study region on a world scale, the other showing the location of the case study on a regional scale
- a description of the type of land degradation that has occurred, why it has occurred and the scale and extent of the impact on the biophysical environment and on people
- strategies put in place to manage the land more effectively
- a bibliography.

Summarise your groups' research in a 10-minute presentation to the class, in a format of your own choice.

Source 6.8.1 These boats have been left to rust in a 'ship graveyard' on the dried-up sea bed of the Aral Sea, Uzbekistan. The Aral Sea, once one of the four largest lakes in the world, has shrunk to less than 10% of its original size.

GLOSSARY

biodiversity (biological diversity) the variety of all life forms: plants, animals and microorganisms; the genes they contain; the ecosystems of which they form a part; and the processes that link them

desertification the process by which productive land is turned into a desert through practices such as overstocking cattle and deforestation

development changes that create a better quality of life for people

ecological referring to the relationship between living things (including people) and their physical environment

environment the totality of our surroundings

extinct (species) a species of animal or plant that no longer exists

fossil fuel a natural fuel, such as coal or gas, formed in the geological past from the remains of living organisms

global warming the gradual rise in average temperatures brought about by an increase in the heat-absorbing gases present in the atmosphere

greenhouse effect the atmospheric processes that maintain an average surface temperature of 15°C

habitat the physical environment in which a community of plants and animals lives

land degradation a reduction in the productive capacity of land due to human activities

pollution any hazardous, or potentially hazardous, substance released into the environment

poverty the inability to meet the basic needs for food, clothing and shelter; the absence of money, goods or the means of subsistence

CHAPTER 7

Coastal environments

The **coastline** is the area where the land meets the sea. The exact point at which this occurs is difficult to determine because of the dynamic nature of tides. As a result, the term **coastal zone** is often used instead. This is the zone in which the interaction between the sea and land processes occur. The coastal zone includes many types of environments: coral reefs, the continental shelf, **coastal barrier** islands, estuaries, salt marshes and mangroves.

Many of the planet's coastal environments are under threat. Fifty per cent of the world's population live within 10 kilometres of the sea and 14 of the 15 largest megacities are located on the coast. Given the scale of this human impact, and the ecological importance of these environments, it is critically important that they are effectively managed.

Source 7.0.1 Forillon National Park, Quebec, Canada

UNIT 7.1

The importance of coastal environments

The coastal ecosystem

Every time a wave crashes into a headland, energy is transferred from the wave to the rock, which slowly breaks the rock down. Coasts are often referred to as 'boundary environments'. This is because they are found at the edge of marine (water-based) and terrestrial (land-based) environments. This interaction between the sea and land is at the centre of the coastal ecosystem.

Importance of the coastal environment

Buffer zone

A coastal environment is a little like a bumper bar on a car. In a collision, the bumper bar bears the shock of the impact and absorbs much of the energy of the collision, helping to reduce damage to other parts of the car. Similarly, the coastal environment takes the full force of the waves and tides from the sea. This helps to minimise the impact to areas further inland. When humans begin to change the coastal environment by removing **sand dunes**, clearing coastal wetlands and dredging, this protective buffer is lost.

Breeding grounds

Coastal environments play a very important role in the broader marine environment. Many of the world's marine species, even those that spend most of their time in the deep oceans, use coastal areas as breeding grounds as well as food sources. From a human perspective, most of the fish species that are harvested for human consumption come from coastal waters (see Source 7.1.1).

These coastal waters are the most productive. This is because they are rich in nutrients, which are brought to the coastal waters by river systems and the process of **upwelling**, a process whereby nutrient-rich waters from the deep ocean are pushed upwards towards to the surface. There is also greater penetration of sunlight in coastal waters, which provides energy for aquatic plants to grow (through photosynthesis). These plants are an important source of food for many species.

Source 7.1.1 Most of the world's fish are caught in coastal waters.

Cultural importance

For many indigenous cultures, coastal areas have great spiritual and cultural significance. For example, in Australia, Aboriginal and Torres Strait Islander peoples have important creation stories that link directly to coastal waters. Coastal waters have always been an important source of food for traditional owners. Traditional hunting in indigenous communities around the world is practised as part of the management of coastal environments.

Coral reefs

Coral reef systems, such as Australia's Great Barrier Reef, are among the most complex and diverse ecosystems in the world. These very important environments are found in the warm, shallow coastal waters of the tropics. They require very specific conditions to grow, and coastal areas where reefs exist require special management to ensure that they are not destroyed.

Function	Coastal environments
Source	• Seafood comprises about 15 per cent of all protein consumed by humans. Most of this is from coastal waters, making this a crucial environment for feeding the world's growing human population. • Coastal areas are crucial habitats for many animal species that rely on coastal waters for both food and shelter. For example, the iconic dugongs of northern Australia rely entirely on the coastal seagrass beds for their food.
Sink	• The value of coastal areas as important carbon sinks is becoming more recognised. Sometimes referred to as 'blue sinks', coastal ecosystems such as intertidal wetlands and seagrass beds are important in absorbing carbon dioxide, as well as adding vital oxygen to the water. Recent research has found that 'blue sinks' are far more effective at capturing and storing carbon dioxide from the environment than so-called green sinks, such as rainforests. • Coastal environments have been used for centuries as places to 'dump' waste. In more recent times, this has become more regulated, but most coastal communities still use coastal waters to disperse treated sewerage and other waste.
Service	• Coasts are important 'zones of transition' from the marine to the terrestrial environment. • One of the most important service functions of the coast is to act as a barrier to the sea. For example, dune systems absorb the energy of storm waves, reducing impacts such as potential flooding from storm surges. • Coastal environments play a crucial role in the movement of sediment. Wave action not only erodes the coast, creating sediment, but it also moves sediment on and off the shoreline. Currents then move this sediment, often very long distances. These processes allow for the creation of new landforms elsewhere, for example barrier systems and sand islands. • Coastal ecosystems, such as intertidal wetlands, mudflats and estuaries (coastal rivers), are vital breeding and nursery grounds for a vast number of marine species. Many species, such as prawns, that are very important to commercial fishing begin life in the coastal ecosystems.
Spiritual	• For many indigenous cultures, coastal environments have an important spiritual value. Aboriginal and Torres Strait Islander peoples, whose traditional lands include coastal areas, have strong links through their Dreaming stories to the coastal environment. • For non-indigenous people, coasts have an important aesthetic and psychological value. Coastal-based tourism is worth billions of dollars annually, as people enjoy spending time in coastal settings.

Source 7.1.2 Functions of coastal environments

Waves

Waves are one of the most important features of any coastal system. A wave is created when energy is transferred from the atmosphere to the surface of the water in the form of wind. This energy can be carried vast distances until it is released at the shoreline as the wave breaks. At this point, the energy is transferred to the land. There are two types of waves: constructive and destructive waves.

Constructive waves tend to be less powerful and are usually created by lighter winds. They bring sediment, such as sand, onto the beach and so gradually construct the beach and other coastal features.

Destructive waves are more powerful waves and are usually associated with large storm events. These waves strike the beach with so much power that they pull sand back with them as the swash retreats back into the sea. During very big storms, waves can take huge quantities of sand from beaches.

An easy way to tell constructive and destructive waves apart is by the colour of the water as the wave breaks. A constructive wave will show sediment caught up in the water as the wave breaks. Destructive waves look clear and glassy.

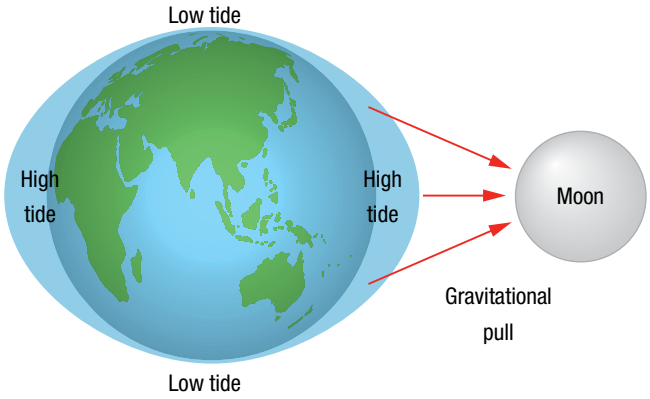
Tides

Tides rise and fall twice a day, due to gravitational forces. The most significant of these is the gravitational pull created by the moon. The pull of the sun and the rotation of the earth also contribute to the tides.

The moon pulls water to the side of the earth closest to it. This creates a bulge or high tide. A similar bulge is then created on the opposite side to compensate. Between the bulges, water is repelled to create a low tide. Every 14 days the moon and sun are in alignment. This creates an extra-strong gravitational pull that results in a particularly high tide, known as a king tide.

Source 7.1.3 During the winter of 2013, powerful, destructive waves eroded vast quantities of sand from beaches, including here at Surfers Paradise on Queensland's Gold Coast.

When a king tide and a storm occur at the same time, the effects of the high tide and destructive waves often lead to a storm surge. Storm surges are caused by very low-pressure cells, such as tropical cyclones. These severe storms form over the ocean and the low pressure causes the air to rise, pulling the sea surface up with it. Storm surges can do tremendous damage.



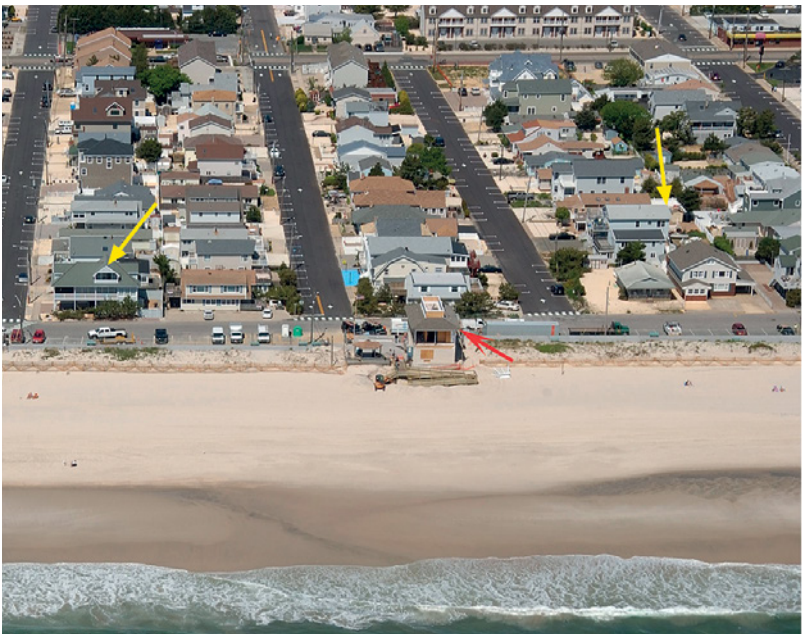
Source 7.1.4 The gravitational pull of the moon is the main cause of tides.

Superstorm Sandy

In October 2012, a powerful hurricane called Sandy developed in the Caribbean Sea. The storm caused considerable damage throughout the Caribbean, killing 54 people on the island nation of Haiti and leaving a trail of destruction across Jamaica and the Bahamas. The storm then headed northwards, up the east coast of the United States.

On the evening of 29 October 2012, the storm struck the coast near Atlantic City in New Jersey. A king tide had increased the high tide by a further 20 per cent, making the storm surge created by the hurricane even more intense. As the storm continued, sea water surged over the sea walls in Lower Manhattan in New York City. The water flowed into tunnels and even the city's famous subway was flooded. The strong winds caused a massive construction crane, 74 stories up on a skyscraper, to collapse, and a large tanker ran aground on Staten Island. Waves were measured at more than 10 metres in New York Harbor.

By the time the storm had blown itself out, 149 people had been killed, more than 8.5 million people were left with no electricity, at least US$20 billion in damage had been caused to private property and about US$19 billion worth of damage had been caused to public infrastructure, including the subways, bridges and other important assets. Even the Statue of Liberty was badly damaged by huge waves and was not re-opened until July 2013, more than eight months after the storm.



21 May 2009

5 November 2012

Source 7.1.5 The impact of Superstorm Sandy can be seen in these photos. The same location in Seaside Heights, New Jersey is shown before and after the storm.

ACTIVITIES

Remembering and understanding

1. Explain why coasts are considered boundary environments.
2. Explain the importance of coastal areas as buffer zones.
3. Outline the role of coastal environments in the broader marine ecosystem.
4. Explain why coastal waters are more productive than the open ocean.
5. Outline the spiritual importance of coastal environments to traditional cultures.
6. Compare destructive and constructive waves.
7. Define a tide.
8. Outline the factors that lead to a storm surge.

Applying and analysing

9. Examine Source 7.1.3. Describe the impact that the destructive waves have had on this part of the Queensland coast.
10. Read the section 'Superstorm Sandy', then complete the following tasks.
    - **a** Outline the nature of the storm.
    - **b** Explain why Sandy was such a damaging storm.
    - **c** With the aid of Source 7.1.5, describe the damage done by the storm.

Evaluating and creating

11. Take on the role of an environmental leader. Prepare a letter to the Australian Government, encouraging them to place greater protections on an area of coast. In your letter, outline the importance of the coast.

UNIT 7.2

Causes of environmental change

About half the world's population live within 10 kilometres of the coast and 14 of the 15 largest cities on earth are located on the coast. This places considerable pressure on our coastlines.

People's impact on coasts

As the human population along the coastline continues to grow, so do the environmental changes that humans cause. For centuries, humans have viewed the oceans as a **continuous resource**, a place that could be exploited and used without concern. This view has led to coastal areas being extensively developed and changed. They are often seen as convenient places to dispose of rubbish, sewage and other contaminants, leading to widespread pollution and environmental damage.

Pollution

It is estimated that about 80 million tonnes of plastic are produced each year. Much of this plastic is disposed of, with a significant amount making its way into the world's oceans and coastal areas, as shown in Source 7.2.1. Plastics have a long life span, taking about 500 years to fully decompose in the oceans. Their buoyancy means that plastic rubbish can travel vast distances.

Once in the oceans, plastics enter the food chain when marine animals mistakenly eat them. More than 200 species of animals, including whales, seals, crabs, sharks and dugongs, are known to be affected by plastics. A build-up of plastics releases toxins into the blood stream, organs and tissues of these animals. Many are also killed when they become entangled in the rubbish.

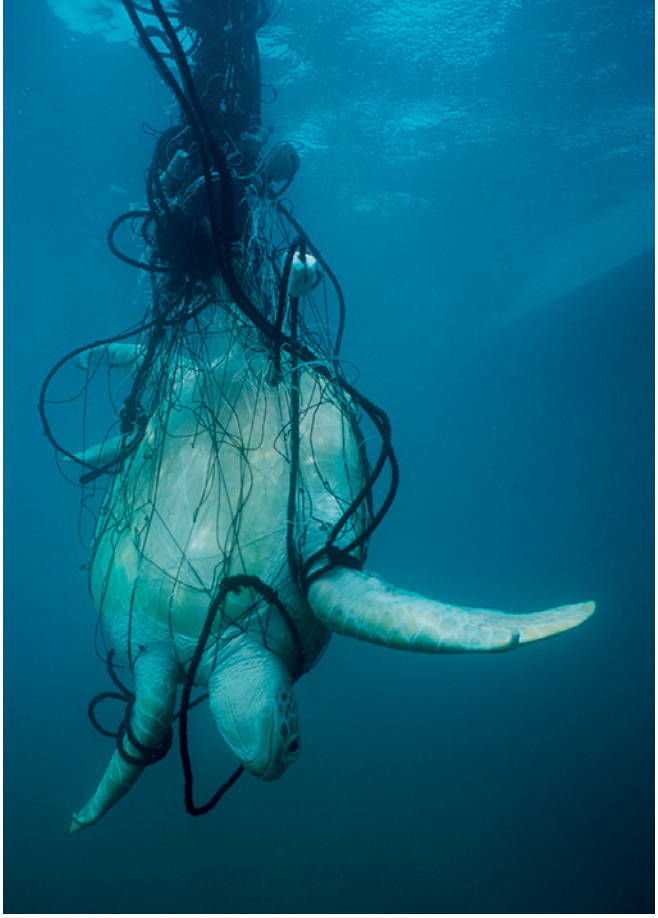
GHOST NETS

About 640 000 tonnes of fishing equipment is lost at sea every year. Much of it is lost in coastal waters. Lost fishing nets, known as ghost nets, kill marine life long after they have been lost.

The coast of the Gulf of Carpentaria, in the far north of Australia, is one of the most isolated and least populated places on earth. Yet there is a major problem with ghost nets there, even though there is very little fishing in the area. The nets are believed to come from fishing grounds in Asia, washed into the Gulf of Carpentaria by ocean currents.

Source 7.2.1 The Indian city of Mumbai has a population of more than 18 million. There is considerable pollution to the extensive coastal mangrove forests that grow around the city.

Ghost Nets Australia is an environmental group established in 2004 by 22 Indigenous communities. Its task is to remove ghost nets from beaches in northern Australia. Since it started work, more than 7500 nets, each capable of killing thousands of marine animals, have been removed from beaches, as shown in Source 7.2.2.



Source 7.2.2 Ghost nets continue to kill marine life long after they have been lost.

Turtles are the most common species found in the nets. Turtles need to rise to the surface to breathe, but the nets trap them, causing them to drown. When Indigenous rangers and environmental volunteers remove the nets from the beaches they stop the nets from being washed back out to sea to start a cycle of death again, saving countless animals in the process.

Development

Most of the world's human population lives on or near the coast and the demand for more and more development has seen coastal environments placed under great stress. Coastal landforms, such as intertidal wetlands and coastal dunes, are often destroyed to make way for canal housing estates, tourist facilities and other developments, as in Mandurah, shown in Source 7.2.3.

Source 7.2.3 Large-scale urban development has dramatically changed the coastal environment in Mandurah, south of Perth.

DUBAI'S ISLAND BUILDING

Dubai is one of the seven emirates that make up the United Arab Emirates. It is a large city and hugs the coastline of the Persian Gulf. Made wealthy from its rich oil reserves, Dubai has a reputation for huge construction projects. One of these projects was the construction of huge islands off the coastline for housing and resort developments, as shown in Source 7.2.4. At present, there are four main developments, three in the shape of enormous palm trees and the fourth in the shape of the world's landmasses.

The islands are made from sand dredged from the bottom of the Persian Gulf and then moulded using special sand-spraying ships. Research by environmental scientists has found that construction of the islands has had considerable environmental impact. During construction, the sand buried wildlife and increased **turbidity** (cloudiness of the water), which, in turn, reduced the amount of sunlight in the water, killing aquatic plants. Another major impact caused by the new islands is the disruption to the flow of currents in this part of the Persian Gulf. This also affects the movement of sand and other sediments.

Destroying buffer zones

Coasts contain very important infrastructure and commercial structures. Almost all the world's trade is done using ships, which require the construction of huge port facilities. These facilities are often built on reclaimed land, which is land that is created by filling in coastal areas, or by destroying important coastal environments, such as wetlands, mudflats and sand barriers.

Ships are also increasing in size and this has meant that deeper and wider harbours are needed. Dredging the sea floor is now very common in many large ports. This involves removing mud and other sediment from the sea floor, changing the environment dramatically.

Source 7.2.4 Taken in 2009, this image from an orbiting spacecraft shows some of the artificial islands off the coast of Dubai. Since then, more islands have been added.

COMMUNITY PROTESTS OVER GLADSTONE HARBOUR REDEVELOPMENT

Gladstone is located about 550 kilometres north of Brisbane, close to the southern end of the Great Barrier Reef. With its large harbour, Gladstone is the perfect location for port facilities for the export of billions of tonnes of mined coal and gas to the west in central Queensland.

Gladstone Harbour has been dredged to make it deeper for the massive bulk carriers that will use the port. Many environmentalists are concerned that the dredging will affect the environment of the harbour and that there will be a big increase in shipping through the Great Barrier Reef to access the port. This increased shipping could lead to devastating oil spills. Community groups such as Save the Reef have implemented a major campaign to highlight the risks. The emergence of such groups over the last few decades highlights the changing attitudes towards the coastal environment and the need to protect it.

Source 7.2.5 Greenpeace and other environmental groups have joined community groups to protect Queensland's coastal environment.

ACTIVITIES

Remembering and understanding

1. Explain how past attitudes towards the coastal environment have led to its degradation.
2. Outline the problem of plastics in the world's coastal and marine environments.
3. Explain what a ghost net is. Describe the environmental impacts of the nets.
4. Describe the construction methods used to create islands in Dubai and the impacts they have on the coastal environment.
5. Outline the concerns of environmentalists about the Gladstone Harbour development.

Applying and analysing

6. Study Sources 7.2.3 and 7.2.4. Using the aerial photographs as a source, brainstorm a list of the ways this type of development affects the coastal environment.
7. Visit the Ghost Nets Australia website and summarise the work being done by the organisation to reduce the hazards of ghost nets.

Evaluating and creating

8. Working in small groups, take the perspective of environmental leaders and research and prepare a presentation to be delivered to an upcoming United Nations conference on environmental pollution caused by plastics.

UNIT 7.3

Managing coastal environments

Serious environmental management is a relatively recent phenomenon. In the second half of the 20th century it became clear that the environment was not an inexhaustible resource and the environmental movement began to become more significant.

Coastal protection

Although much of the world's population lives near the coast there has been little attention paid to the protection of coastal environments. This lack of concern has seen coastal environments destroyed to make way for urban development, infrastructure such as ports, and unsustainable tourism.

Whenever humans want to live near the sea there will be a tension between the need to protect the coastal environment and the interests of humans. An increasing number of people understand the value of the coastal environment and the need for its protection, and there are many community-based organisations actively engaged in the protection of the coastal environment. Over recent years, much tougher environmental restrictions have been placed on new coastal developments in many countries, including Australia. These restrictions are often the result of community pressure and protests.

Coastcare, which was formed in the 1990s, is one such organisation. Across Australia there are about 2000 separate Coastcare groups working to protect stretches of the Australian coastline. Coastcare groups are made up of individuals who volunteer some of their time to undertake environmental works. For example, Coastcare groups are often involved in coastal sand dune revegetation. This is a labour-intensive task. The free labour of volunteers enables local councils to undertake this important work, which might otherwise be too expensive for them to do.

Strategies for managing the coast

Environmental management strategies can be divided into two types:

1 ***protective***—used to protect coastal environments from damage in locations where human impact has been minimal, or where the environment has already been repaired

2 ***restorative***—used to repair damage already done by human activities.

In order to be successful in the long term, restorative strategies need to be followed up by protective strategies.

Protective strategies

While a large proportion of the world's coastal environment has been altered by human activity, there remain large areas that are relatively intact. Protective strategies are crucial for ensuring that these areas remain safe from human impacts.

Restricting development along coastlines is one of the most effective strategies for protecting them. Determining the type of activities allowed in an area is known as **landuse zoning**. Through careful zoning, coastal environments can be protected from large-scale urban developments that can destroy the entire ecosystem.

Sometimes zoning can also be used to enable more appropriate developments. For example, zoning can be used to ensure that development does not take place on the most active parts of beaches, such as in the dunes. By keeping buildings away from this area there is less need to construct sea walls and other sea defences. In many coastal communities, there is pressure on local authorities to build environmentally damaging sea defences to protect homes and developments from erosion from the sea.

SEA WALLS

Sea walls are commonly built along stretches of coastline where there is erosion that threatens property. They are usually built from concrete or large stones, to absorb the power of the waves. In nature, dune systems, which are large accumulations of sand, usually absorb the power of the waves. However, in many places the dunes have been flattened to make way for development, and sea walls are needed.

When a wave smashes into a sand dune, much of the energy is able to pass out of the wave and into the sand. However, when a wave hits a sea wall, the energy is unable to pass through the solid surface, and is reflected back. This reflected energy is often powerful enough to erode sand from in front of the sea wall, a process known as scour. Scour in turn causes the beach in front of the wall to be eroded, as shown in Source 7.3.1.

Source 7.3.1 This sea wall at Teignmouth in the south of England has caused so much erosion that its foundations are now visible at the base of the wall.

FENCING

A simple but highly effective protective strategy is fencing. Dunes play a crucial role in the functioning of many coastal areas. Dunes are created by winds causing sand to pile up into huge mounds, over which vegetation eventually begins to grow. The vegetation is critical to stabilising dunes and preventing them from blowing away.

As people cross sand dunes to access beaches, they walk on the vegetation and gradually kill it. This is known as trampling. Trampling exposes the sand and the dune begins to be eroded by the wind. By installing fencing around the dunes and some educative signage, trampling can be substantially reduced.

Fencing works best when pathways through the dunes, known as access ways, are provided (see Source 7.3.2). For example, providing access ways linking carparks to popular beaches helps to ensure that people stay off the dune vegetation. A board and chain walk—narrow strips of wood connected by a flexible chain—can be used to cover the sand and reduce erosion in the access way. Dune vegetation is very susceptible to fire, so installing bins at either end of the access ways helps to reduce the risk of fire from cigarettes and glass.

Source 7.3.2 Fencing dunes and funnelling people into access ways helps to reduce the impact of beachgoers on the dunes.

Restorative strategies

When the coastal environment has been degraded by human activity, restorative strategies are needed to repair the damage. These strategies are often time-consuming and can be expensive, but they can be highly effective at undoing the damage. Restorative strategies are effective only if the restored environment is then protected from any future harm.

One of the most widely used restorative strategies in coastal ecosystems is revegetation. Coastal sand dunes are an important part of many coastal environments, and vegetation is essential for their stabilisation. Replanting of dune systems is often undertaken by volunteers, such as Coastcare.

Source 7.3.3 Maeslant storm surge barrier, the Netherlands

HARD ENGINEERING

For centuries, humans have been trying to tame the coastal environment. By their nature, coasts are highly dynamic places, meaning that they are constantly changing. This does not suit human developments that require stability. To overcome the dynamism of the coast, humans have used complex engineering to try to control the power of the sea. This is often referred to as **'hard engineering'**.

One of the best examples of hard engineering is the Italian city of Venice, which has literally been built out of the sea. Venice lies at the north-eastern end of the Adriatic Sea within a very large lagoon. The coastal environment once consisted of 118 small islands surrounded by marshes and shallow lagoon waters. From the 13th century onwards, the lagoon was slowly transformed by the creation of 160 canals between the islands, criss-crossed by about 400 bridges. Wooden pilings were driven into the soft mud of the marshes and the city was built on top. Today, Venice is one of the most visited cities on earth. However, it requires constant maintenance and is slowly sinking into the mud.

The people of the Netherlands have been using hard engineering to protect themselves from the sea for more than a thousand years. About 20 per cent of its landmass, on which about 20 per cent of its population live, is below sea level. As levels rise as a result of climate change, hard engineering projects in the Netherlands are becoming bigger, more complex and much more expensive. One of the most impressive is the huge Maeslant storm surge barrier, shown in Source 7.3.3, which protects the huge port of Rotterdam from flooding. The barrier has two huge doors, each 240 metres long, that can be closed within 90 minutes to stop the sea from flooding into the Nieuwe Waterweg (New Waterway) Canal, which connects Rotterdam to the North Sea. During big storms, the gates close to protect the port and surrounding land.

SOFT ENGINEERING

Soft engineering is a very different technique for managing the coastal environment, and is becoming more popular. Instead of changing and controlling the coast, soft engineering is aimed at working with nature and changing how people interact with coasts. One example of soft engineering is the restoration of old dune systems so that the dunes can absorb the power of storm waves. This in turn means that expensive and damaging sea walls can be removed.

Soft engineering is usually cheaper in the long run because there is no ongoing maintenance. However, soft engineering projects are often undertaken at the expense of development projects. For example, land has to be put aside for dune restoration instead of being developed and sometimes this can be seen as 'wasting' the resource. People with this view generally see the ecosystem in terms of its value for human use rather than its ecological value.

Source 7.3.4 shows a soft engineering project off the coast of Louisiana. The US National Oceanic and Atmospheric Administration (NOAA), with other partners, has constructed earthen terraces and barrier islands to create wetlands, which will trap sediment and create new land over time. It has been estimated that Louisiana lost approximately 0.5 million hectares of land during the 20th century and continues to lose 65 square kilometres of coastal wetlands every year.

Source 7.3.4 NOAA restoration project, Louisiana. This photograph, taken three months after the hurricanes Katrina and Rita, shows new land being built between the terraces.

ACTIVITIES

Remembering and understanding

1 Outline the changing attitude towards coastal environments.
2 State the tension between the interests of humans and the protection of the coastal environment.
3 Describe the role of the community in protecting the coastal environment.
4 Explain the difference between protective and restorative strategies for environmental management.
5 Outline the concept of zoning and explain how it can be used to protect the coastal environment.
6 Describe the role of fencing dunes in protecting coasts.
7 Explain the value of access ways.
8 Outline the importance of replanting dunes as a restorative strategy.
9 Explain the difference between hard and soft engineering.

Applying and analysing

10 Outline the advantages of soft engineering over hard engineering.
11 Examine the information in the text on sea walls and complete the following activities.
   a Explain why sea walls are built.
   b Outline the environmental consequences of sea walls.

Evaluating and creating

12 Taking the perspective of an environmental manager for a local council on the coast, prepare a presentation to give to residents about why the council should look for alternatives to building a sea wall which the residents want.

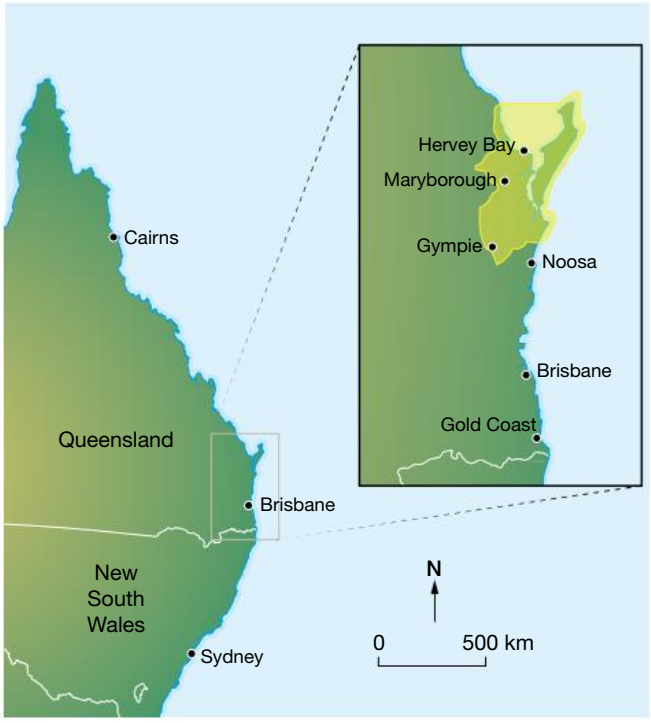
Case study: The Great Sandy Region

A unique environment

The Great Sandy Region is one of Australia's most unique and valuable environments. It is also an area that is of important economic and social value to human communities. Thousands of people live within the region and many hundreds of thousands more visit the region every year as tourists. For this reason, careful management of the environment is essential.

Location

The Great Sandy Region is located to the north of Queensland's Sunshine Coast, stretching northwards from Noosa to the Burnett River north of Bundaberg (see Source 7.4.1).



Source 7.4.1 Location of the Great Sandy Region

Biodiversity of the Great Sandy Region

The Great Sandy Region is one of the most biologically diverse places in Australia. Its waters contain more fish species than the Great Barrier Reef and it provides a habitat for half of Australia's bird species. The sand there is the key geological feature of the region, which contains some of the most ancient sand dune systems found anywhere on earth. Fraser Island, shown in Source 7.4.2, is the largest sand island in the world.

Source 7.4.2 Fraser Island

The sand that makes up the landform features of the Great Sandy Region has been accumulating for millions of years. The vast sandstone mountain ranges of eastern Australia have been gradually worn down by running water and the sand swept out to sea by coastal river systems. Powerful currents moving parallel to the shoreline have carried the sand northwards in a process known as **longshore drift**. At Hervey Bay, at the top of the Great Sandy Region, rocky headlands have trapped the sediment in a basin.

Over thousands of years, sea levels have risen and fallen. At times of low sea level, the sand has been exposed, enabling the wind to shape the sand into the huge sand dunes that are found throughout the region today.

Source 7.4.3 Mangrove forest in the Great Sandy Region

Human impacts

In the decade 2001–11, the population of the Fraser Coast Regional Council—the local government area or LGA, which is located over much of the Great Sandy Region—grew 31 per cent, adding more than 23 000 permanent residents to the area. Much of this growth took place in Hervey Bay, where the population increased by 43 per cent.

Three major rivers flow into Hervey Bay—the Mary, Burnett and Burrum. The Paradise Dam on the Burnett River was opened in 2005 and there have been plans to build a new dam on the Mary River at Traveston Crossing.

As the region's population grows, the amount of water used by humans increases. The amount of fresh water being taken out of these important river systems is beginning to change the chemical make-up of the waters of the Great Sandy Region. During dry years, the flow of water down the rivers and into Hervey Bay declines considerably. Marine scientists have found evidence of hyper-salinity in parts of Hervey Bay. Many marine species within the Great Sandy Region are very sensitive to changes to salinity. Mangrove forests (see Source 7.4.3), found throughout the region, are also very sensitive to increases in salinity. These forests are critical to the health of the whole ecosystem of the Great Sandy Region, as many of the marine species breed and hatch their young in mangrove forests.

Tourism

Each year, close to 750 000 people, including 120 000 international tourists, visit the Fraser Coast region. Fraser Island and Hervey Bay (see Source 7.4.4) are the most popular destinations. About three million people holiday on the Sunshine Coast, which is located on the southernmost part of the Great Sandy Region.

Source 7.4.4 Large-scale tourist developments have taken place in Hervey Bay.

The tourism industry is vital for the economies of the towns in the region. Significant parts of the coast have been extensively developed to provide resorts and hotels. This has resulted in land clearing and the loss of important habitats, including mangrove forests. The development of a large marina and hotel complex on the shore of Hervey Bay opposite Fraser Island has altered the structure of the coastline. Tourism developments affect water quality because of increased urban run-off, sewage, rubbish and other pollutants.

TOURISM AND FRASER ISLAND'S DINGO POPULATION

One of the most iconic species of Fraser Island is the dingo. The dingo is the apex species on the island, meaning that it is at the top of the food chain and it helps to keep the island ecosystem in balance. As the number of people visiting the island has grown, the number of interactions between dingoes and people has also grown. In some cases, this has resulted in death and injury to people. In 2011, a three-year-old girl was mauled by dingoes.

After each attack on a person, there have been calls to reduce the number of dingoes by culling them. After the 2011 attack, rangers shot and killed the two dingoes thought to be responsible. Part of the problem is that some campers and visitors have been feeding the dingoes and they are beginning to lose their fear of humans.

A dingo management plan was released in July 2013 by the Queensland Government. The plan aims to reduce the risk of dingo attack by reducing human interactions with the dingoes. This is to be achieved by:

- temporarily closing camping grounds where the behaviour of dingoes has been modified due to human interactions
- tagging more of the animals to track their movements
- installing more signage and improving public education programs about the dingoes and the importance of not feeding them.

Threatened species: false water rat

The false water rat, or water mouse as it is commonly known, lives in the intertidal zone along the eastern coast of Queensland. This tiny creature, shown in Source 7.4.6, weighs less than 70 grams. It lives in the mangrove forests and salt marshes that fringe the coast. It is currently listed as vulnerable and suffers from unsustainable human activities. Feral pigs and red foxes, which are introduced species, hunt the water rat.

Source 7.4.5 The management of Fraser Island's dingo population is challenging.

Threatened environments: fens

Fens are saturated environments in which ridges of peat, which is undecomposed vegetation, lie between pools of water, creating a patterned formation (see Source 7.4.7). They are common in wet and cold environments. The fens of Fraser Island, which began to form about 6000 years ago, are the only fens found in subtropical areas. The soils within fens are devoid of oxygen, which is why vegetation does not decompose.

Source 7.4.6 False water rat

Source 7.4.7 The unique patterned fens environment of Fraser Island

The fens on Fraser Island are important to the island's overall environment because they are one of the few areas on the island that is open; the rest is covered by thick rainforest. The fens are an important habitat for several species of birds, such as the threatened ground parrot; mammals, such as the false water rat; and amphibians, including several species of endangered frog.

Managing threatened ecosystems

The Great Sandy Region contains a wide variety of ecosystems. Each of these requires specific management strategies.

Local and international protection

The Great Sandy Region National Park was established in 1971. With a total area of almost 75 000 hectares, the park covers a large part of the Great Sandy Region. National parks in Australia have protected status due to their environmental significance. This means that human activity is restricted. In 1992, Fraser Island, which is within the Great Sandy Region National Park, was also made a UNESCO World Heritage site. It gained heritage status in recognition of the island's unique natural features, including complex dune systems, dune lakes and rainforests. The inclusion of Fraser Island on the World Heritage list means that there is an extra level of protection of this important environment.

RAMSAR CONVENTION

The Ramsar Convention is an important international law that helps to protect habitats used by migratory birds. As several species of migratory birds, some of which fly from as far away as China and Siberia, spend time in the fens, the fens are considered to be an important site for global bird migration.

Another important ecosystem in the Great Sandy Region that is part of its Ramsar site is the intertidal wetlands. This unique ecosystem includes extensive mangrove forests, which line much of the region's coastline and estuaries. Salt water moves up the tidal rivers at high tide and fresh water flows down from inland at low tide. In total, the Great Sandy Region's Ramsar site covers more than 93 000 hectares, including open water, channels and creeks.

Targeting key issues

The main environmental issues that require management within the wetlands are:

- feral introduced animals, including pigs, which dig up the ground and foxes, which prey on wading birds and false water rats
- weeds, which take over the native vegetation—very often these weeds come from domestic sources; for example, people living in urban areas close to the wetlands have garden plants, including grass, such as kikuyu, which then invade the wetlands
- human interactions, especially the swash from boats, which cause erosion; off-road vehicles, which cause damage; overfishing; and abandoned fishing equipment such as lines and nets, which entangle turtles and birds
- pollution, including rubbish and water pollution from stormwater drains, which eventually release water and the pollution into the wetlands.

Strategies to manage these issues include the following.

- Feral animals are tracked, in order to collect data about them. Traps and culling are used to reduce their numbers.
- Weeds are carefully monitored in order to contain weed outbreaks before they can get out of control.
- Human interactions are managed through education of visitors about their impacts. Signage throughout the region, for example signs at popular fishing spots about not leaving equipment, reminds people to act responsibly. Controls are also important, for example speed zones for boats to minimise swash from motors, and restrictions on 4WD access to confine vehicles to areas where they will have less impact. These controls are reinforced by education programs as well as rangers.
- The flow of rubbish into the waters of the region is reduced by simple strategies such as installing bins at popular tourist spots and using rubbish traps across stormwater pipes.

As the area is so popular with visitors, careful management of visitor numbers is crucial to protecting the region.

INTRODUCED PLANT SPECIES: BITOU

Bitou, shown in Source 7.4.8, is a highly aggressive weed that grows rapidly across sand dunes, eliminating native flora. It produces huge quantities of seed, giving it advantages over other species. The bush is native to South Africa and was introduced to Australia to help stabilise dunes after sand mining.

Bitou is a major problem in New South Wales, where it is present in 60 per cent of dune systems and 80 per cent of headlands. Within the Great Sandy Region, including Fraser Island, it is a small but growing problem. Without careful management, the species could easily get out of control. Monitoring across the region is important to keep track of outbreaks of the weed. Hand pulling—literally pulling out the plants by hand—is very effective but quite expensive, as it uses so much labour. Coastcare volunteers do much of this work across the region.

Source 7.4.8 Bitou bush

Introduced animal species: gambusia

Gambusia, shown in Source 7.4.9, is a small fish introduced from California to help control mosquitoes. Gambusia competes with native species and since its introduction it has had a huge impact on native species numbers. Dealing with the gambusia is proving challenging but the use of biological controls has had some success in other parts of Australia.

Source 7.4.9 The tiny introduced gambusia, sometimes called the mosquito fish, has devastated native small fish populations.

Fire management

Managing for fire is also an important strategy for protecting the Great Sandy Region's ecosystems. Some of the region's environments are very vulnerable to fire, for example the patterned fens and dune systems of Fraser Island. The peat ridges of the fens are made up of undecomposed vegetation, which is very flammable—so flammable that in many parts of the world it is used as the main fuel source. In the dune system, vegetation is critical for holding the dune together. Without vegetation cover, the exposed sand is easily eroded by wind. Therefore, fires in the dunes can have a devastating impact on the whole ecosystem.

The main source of fire in both the dunes and the fens is human activity. For example, campfires lit in the dunes can easily get out of control and burn the woody plants that make up the dune vegetation. Discarded rubbish, especially glass and cigarettes, can be a source of ignition. Throughout the region, signage alerts visitors to the risk of fire. Rubbish bins have been installed and camping is confined to designated areas where the fires can be built in pre-dug pits to minimise risk. Rangers patrol regularly to enforce these rules.

ACTIVITIES

Remembering and understanding

1. Describe the location of the Great Sandy Region.
2. Describe the processes that have led to the creation of the Great Sandy Region.
3. Explain how vast dune systems such as those on Fraser Island have been formed.
4. Outline the population growth in the Great Sandy Region.
5. Describe the impact of tourism on the environment of the region.
6. Describe the environment of the patterned fens.
7. Why are the patterned fens such an important habitat on Fraser Island?
8. Explain the purpose of the Ramsar Convention.

Applying and analysing

9. Construct a table with the heading 'Environmental issue' in the left column and 'Management strategies' in the right column. Summarise the issues facing the Great Sandy Region and the strategies being used to deal with them.
10. Study Source 7.4.4. Describe the impacts on the environment that are evident from this development.
11. Research the consequences of dam building along the rivers that feed fresh water into the Great Sandy Region and write a short report summarising your findings.

Evaluating and creating

12. In a small group, design a poster or a digital presentation for visitors to Fraser Island about management of dingoes. You may wish to visit the Fraser Island National Park website.
13. Plan a detailed information campaign to educate visitors to the Great Sandy Region about the dangers of fires to the environment. Outline how you will encourage people to behave responsibly.
14. Prepare an extended response on the following topic: 'The wetlands of the Great Sandy Region are an important ecosystem that needs careful management.'

Case study: Bay of Fundy, Canada

Challenges to the Bay of Fundy

Like many ecosystems around the world, the Bay of Fundy faces many challenges. Commercial activity associated with tourism has expanded substantially, as has the tidal power industry. Both need monitoring and management. In addition, the traditional industries of fishing and agriculture place stress on the environment and there are concerns over the impact of climate change.

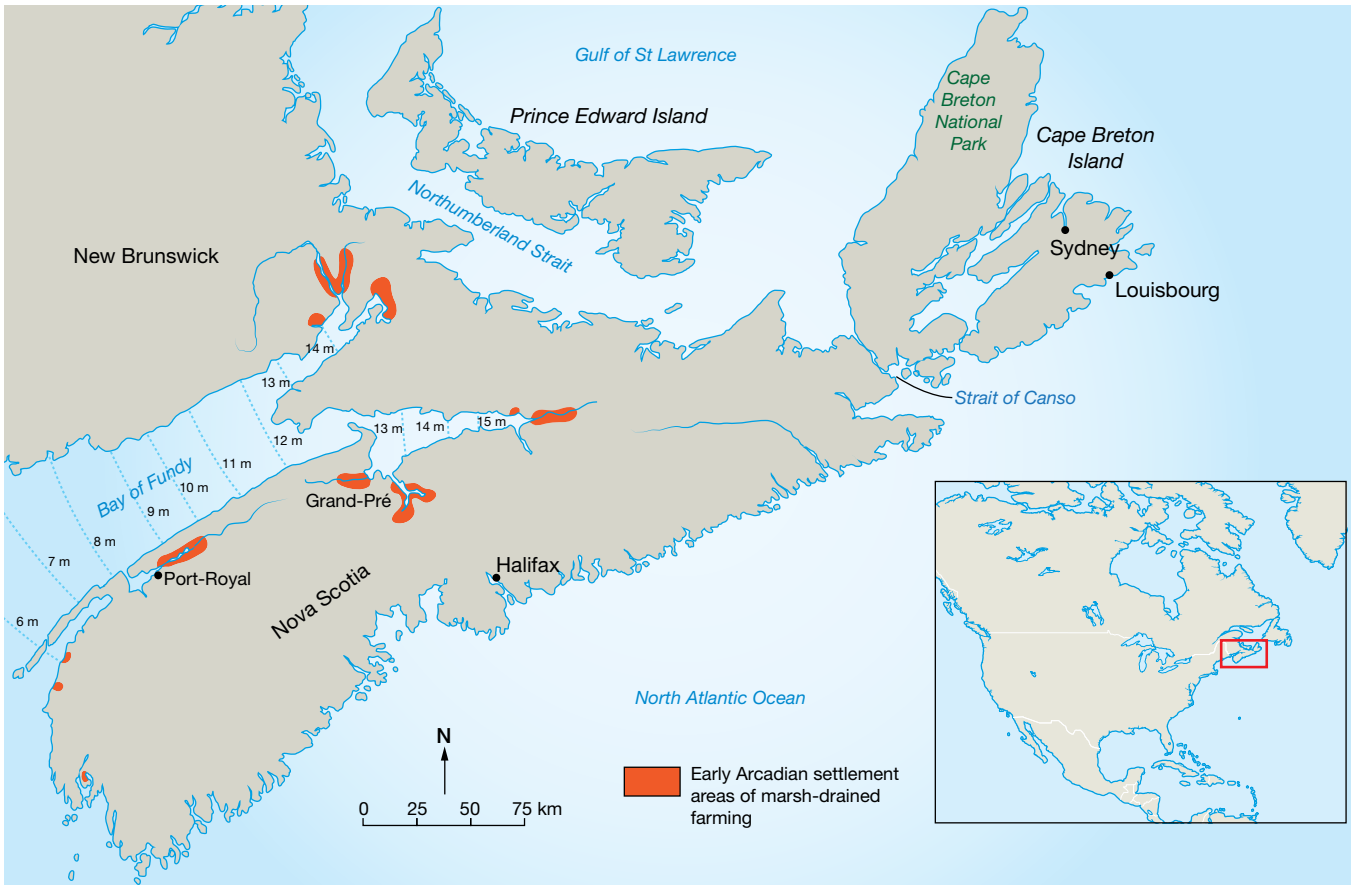
Location

The Bay of Fundy is a large bay off the Atlantic Ocean on Canada's east coast. The bay covers a total area of more than 9000 square kilometres, stretches more than 150 kilometres and at its entrance is 52 kilometres wide. It is renowned for its enormous tidal range, which is the difference in height between low and high tides.

Every 12 hours and 25 minutes the tide rises an average of 16 metres, one of the highest tides in the world (see Source 7.5.1). The highest recorded tide in the bay was 21 metres, during Tropical Cyclone Saxby Gale in 1869.

The huge tides of the Bay of Fundy, shown in Source 7.5.2, are the result of the unique shape of the bay. High cliffs surround it, reaching upwards of 60 metres in some parts. The shape of these cliffs creates narrow inlets within the bay, which act as funnels for the incoming and outgoing tides. When the tides enter the bay at its mouth they are normal, but as they push up the ever-narrowing bay they are 'squeezed' by the surrounding cliffs and the increasingly shallow base, causing the water to rise. The outgoing low tide collides with the incoming high tide, causing a wave of water to be pushed into the bay, a process called **resonance**.

Source 7.5.1 Location of the Bay of Fundy, Canada



Source 7.5.2 The Hopewell Rocks in the Bay of Fundy at high tide and low tide

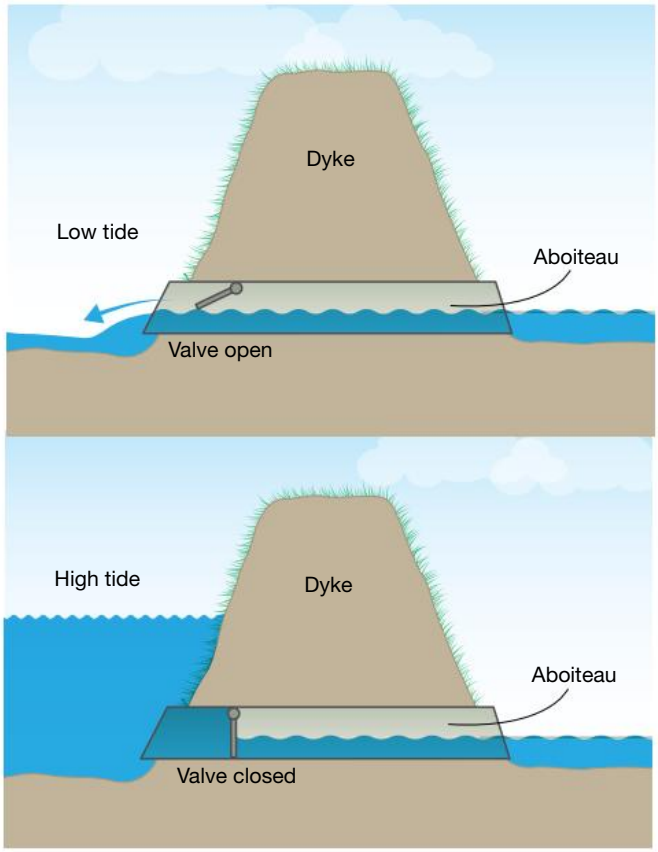
Human impacts

Draining the marshes

The salt marshes lining Nova Scotia's Bay of Fundy have been drained for agriculture since the early 1600s. The Arcadian people—French settlers who first claimed Nova Scotia as their home—employed their dyke-building skills to drain salt marshes, reclaiming thousands of hectares of productive farmland.

The Arcadians built the dykes along the outer marsh areas. Their construction required an enormous amount of work due to the great tidal range experienced in the bay. Sometimes these structures were constructed by driving five or six rows of logs into the ground, laying other logs, one on top of the other, between these rows, filling all the spaces between the logs with well-packed clay and then covering everything with sods cut from the marsh itself. Sometimes dykes were built by simply laying marsh sods over mounds of earth.

The Arcadians also devised a system of drainage ditches with an ingenious one-way water gate called an aboiteau. The aboiteau (see Source 7.5.3) was a hinged valve in the dyke that allowed fresh water to run off the marshes at low tide, but prevented salt water from flowing onto the farmland as the tide rose.



Source 7.5.3 The ingenious one-way water gate, called an aboiteau, used to drain Nova Scotia's marshlands

After letting rain (and snow) wash away the salt from the marshes over a period of 2–4 years, the Arcadians were left with fertile soil that yielded abundant crops.

Building and maintaining the complex system of dykes and valves demanded a high level of cooperation. Everyone had to be vigilant and ready at all times to repair breaches that could be caused by storm waves or simply by soil erosion.

Tourism

As far back as the 19th century, the Bay of Fundy was a popular tourist destination. With the growth in **ecotourism** and nature-based tourism in the last 20 years, tourism in the region has boomed and today more than 1.2 million people visit the region annually.

Tourism needs to be well managed to bring substantial economic benefits to the local community without causing significant harm to the environment. Tourism has a number of impacts on the bay's environment.

- Many migratory bird species stop in the Bay of Fundy on their annual migrations. Sand pipers feeding on the exposed mudflats at low tide are disturbed by large numbers of tourists and the time they have to feed is reduced.
- There are more than 20 whale-watching businesses in the bay and careful management is needed to ensure that the whales are not stressed by too much human interaction.
- About 200 000 people now visit the Bay of Fundy on cruise ships. The ships coming into the bay are getting larger and there are concerns that the wake of the large ships will increase erosion of both the bay floor and the surrounding cliffs.

Tidal power

The huge tides in the Bay of Fundy make it an ideal location for the development of a tidal power industry, but there are some serious environment concerns about tidal power. The large turbines (see Source 7.5.4) and associated equipment can alter the flow of currents and sediment in the bay. The blades of the turbines can hit animals and the noise they create interferes with animal movements in the bay. One of the least understood but most significant concerns relates to the electromagnetic fields created by the turbines. Many species, such as rays, sharks and many shorebirds, use the earth's natural electromagnetic fields to navigate. The huge turbines create their own fields and this can confuse the species and lead to navigational errors as well as cause distress.

Source 7.5.4 Part of a huge wave energy turbine being transported to a site in the Bay of Fundy

Climate change

The high tidal range in the Bay of Fundy means that the area is subject to very high levels of erosion. Studies conducted by scientists working for the province of Nova Scotia have found that tides may rise by as much as 10 per cent in the Bay of Fundy as a result of climate change. Of particular concern is the impact of this on the salt marshes (see Source 7.5.5) and mudflats.

The flora and fauna located in the mudflats and salt marshes have adapted to the inundation from the incoming tides twice a day. As sea levels rise, less and less of the salt marshes and mudflats are exposed at low tide, destroying the ecosystem that the plants, animals and microorganisms have adapted to. Climate change will also cause an increase in storm activity, which will lead to more erosion.

Local authorities are planning to put in place management strategies for reducing the impact of climate change on the delicate ecosystem of the Bay of Fundy. One of the most important strategies is to closely monitor the effects of rising sea levels on the shoreline environment. This includes gathering data on wave energy and its impacts on erosion, and undertaking detailed studies of threatened species.

Source 7.5.5 Salt marshes, like these at Fox River, in the Bay of Fundy, are at risk from climate change.

With a bank of data, better management strategies can then be devised to help protect the bay from climate change.

Some of the strategies being planned for the bay include:

- construction of sea walls and other sea defences
- soft engineering
- revegetating salt marshes further inland
- beach nourishment, which involves dumping additional sand onto beaches after erosion by storms and high tides
- construction of vegetation strips using plants such as seagrasses to reduce the speed of waves as they approach the shoreline.

Introduced species

Foreign species are most commonly introduced into the bay by ships. As ships move around the world, species attach themselves to the hull and 'hitch' a ride to new areas. Ballast water can also contain unwanted species. Ships take on ballast to weigh them down when they have light loads and release the water once they take on heavier loads. When pumping in the ballast, foreign species can be taken on board and then discharged elsewhere.

COMMON PERIWINKLE

The common periwinkle is believed to have been introduced into the bay in the early 1800s, possibly intentionally to provide a source of food. This snail-like mollusc lives in large numbers on the rocks and mudflats of the intertidal zone. The periwinkle's success has come at the expense of native molluscs, several of which have disappeared from the bay.

EUROPEAN GREEN CRAB

The European green crab competes with native oysters, molluscs, crabs, scallops and a range of other species in the bay. It has a wide diet and its numbers have increased significantly.

AQUATIC PLANTS

Codium, shown in Source 7.5.6, is not yet well established in the Bay of Fundy but scientists are very concerned about it. Sometimes called green sea fingers, it grows very densely and chokes out native species. It also reduces sunlight penetration, so that the sea floor often becomes barren. This disrupts the food chain, affecting many species.

Source 7.5.6 Codium is an introduced seaweed that has the potential to cause great damage in the Bay of Fundy.

Local and international protection

The importance of the Bay of Fundy is recognised at a global level through the Ramsar Convention. Four specific areas within the bay are protected under the Ramsar Convention, which requires the Canadian Government to ensure their protection and management. There are also many other areas of the Bay of Fundy that are protected by federal, province, territory and local governments. These include large areas such as national parks through to small conservation areas that are managed by local authorities.

Managing introduced species

Management of introduced species is complex, but the most effective strategy is to intercept them before they arrive. Strict regulation of commercial shipping is important for the Bay of Fundy; for example, the hulls of ships must be painted with anti-fouling paint. This special paint is applied to the bottom of a ship to stop molluscs and aquatic plants from attaching themselves.

Controls over the discharge of ballast water have also been introduced. Ballast water is used by ships to weigh them down when they have little cargo on board. The water is taken in by the ship at one port and then discharged as it takes on cargo at a different port. As the ship takes in the water, small aquatic animals and plants can also be sucked into the ballast tanks and these can then be released when the ballast is discharged elsewhere. Ships entering the Bay of Fundy must now discharge their ballast well out to sea, and nets must be installed over ballast intakes.

Restoration management strategies

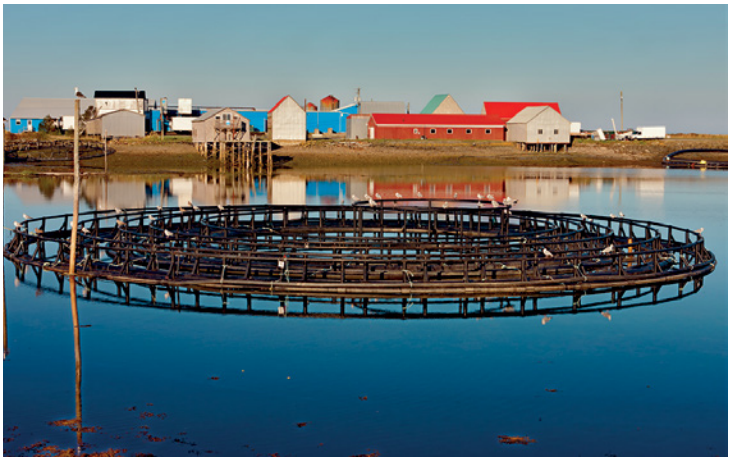
The environmental importance of the marshes is now recognised, and a number of projects to restore this environment are now underway. In the Upper Bay of Fundy, a number of dykes have been removed, along with some dams that blocked waterways. As a result of these actions, fresh water is beginning to move back across the low-lying areas and the tidal flow is being restored.

Studies have shown that salt marshes and other wetlands can quite quickly reinhabit the restored areas. At a 13-hectare test site on St Croix River, when a dyke was removed, former farmland began to return to a wetland habitat within a year. Plants began colonising the area once the tidal flows returned and soon after, birds and other species began to return.

Managing aquaculture

There is a growing aquaculture industry in the Bay of Fundy. Most of the farms produce salmon in large cages in parts of the bay. One of the consequences of the salmon farming is that large amounts of nitrogen and phosphorus are produced by uneaten fish food and the digestive systems of the fish. These chemicals

Source 7.5.7 The dyke lands are an important part of the Bay of Fundy. Restoration work is beginning to return parts of these dyke lands to their natural state.



Source 7.5.8 Aquaculture in the Bay of Fundy requires careful management.

can interrupt the normal food chain and cause the growth of algae, which can produce an imbalance in the environment. Scientists from the University of New Brunswick and elsewhere have been working on solutions for reducing the environmental impacts of aquaculture on the bay.

One strategy is to use the by-products of the fish and the uneaten food as a source of food for other commercial species. For example, kelp and mussels are grown on ropes around the cages. They use the nutrients added by the fish farms to grow, using it before it enters the broader environment. Ultimately, it is expected that the kelp and mussels can then be harvested and sold for food and other commercial purposes.

ACTIVITIES

Remembering and understanding

1. Explain the reason for the massive tides in the Bay of Fundy.
2. Describe the impact of tourism on sand pipers.
3. Describe the impact of climate change on the Bay of Fundy.
4. Outline the strategies being developed to manage climate change in the Bay of Fundy.
5. Describe the role of shipping in introducing foreign species into the Bay of Fundy.
6. Explain the impact of codium on the environment of the Bay of Fundy.
7. Outline the impacts of aquaculture and the strategies used for managing these impacts.

Applying and analysing

8. Take on the role of an environmental scientist for the province of Nova Scotia. You have been appointed to conduct community briefings on the impacts of climate change and how communities can better manage these impacts. Using the information in the text and research from the internet, prepare a digital presentation and present it to the class.
9. Prepare a short report on how the dyke lands of the Bay of Fundy are being rehabilitated.
10. Using the internet, conduct research into tourism in the Bay of Fundy. Make a list of the type of activities that can be done in the bay. Share your list with a partner and together brainstorm the potential impacts of the activities on the environment. Record this in a mind map or list.

Evaluating and creating

11. In a small group, design an educational campaign about the risk of codium to the Bay of Fundy. Your campaign should be targeted at local people and outline the problem as well as how locals can help deal with the threat. You may wish to design a digital campaign, posters or radio or television advertisements.
12. As a class, discuss whether the benefits of tidal power outweigh the impact on the environment. Justify your response.

Inquiry tasks

The different types of coastal environments

After reading this unit, undertake online research and collect visual sources from Australia and overseas to describe the various types of coastal environments and to explain their environmental importance.

Examples should include:

- sandy beaches
- rocky or cliffed coastlines
- coastal wetlands including mangroves
- swamps and salt marshes
- coral reefs
- seagrass meadows.

Emphasis should be placed on the importance of coastal environments as buffer zones where coastal processes impact on the land, their role as breeding grounds for marine creatures and fishing grounds for humans, and their cultural and spiritual significance for people.

Human activities shaping coasts

Working in groups of four, brainstorm five types of human activities that are located along the coast, and that shape and change coastal environments; for example:

- residential development—including low-density development and high-rise apartments
- tourism and recreational activities
- land reclamation for airports and other infrastructure
- ports and harbours
- maintenance and dredging of shipping channels
- industries such as oil refineries, desalination plants and alumina smelters
- shipbuilding
- commercial and recreational fishing
- agriculture
- mining
- waste treatment plants and sewage farms
- wind farms
- defence establishments.

Your group should source visual materials from online sites and other reference materials to identify the specific location, the scale and the extent of human activity on coastal environments.

Report your findings to the class in a 5-minute oral report and add your visuals to a collage or wall chart entitled 'Human impact on coastal environments.'

Coastal management strategies

Although much of the world's population lives near the coast, little attention has been paid to the protection of coastal environments. This lack of concern has seen coastal environments destroyed to make way for urban development, infrastructure such as ports, and unsustainable tourism.

Your task is to write a research report of 500 words about the need for coastal management measures to protect coasts, providing examples of hard and soft engineering used by coastal authorities. Using the information provided in this chapter and undertaking further reading, describe and explain why coastal management is necessary.

Consider mentioning the following in your report:

- the dangers associated with coastal flooding by storm surges, tsunamis and rising sea levels
- large-scale residential or tourist developments, such as those on the Gold Coast in Queensland
- coastal erosion by wave action
- the hazards associated with water pollution
- the need to preserve the qualities of coastal environments.

Examine the positive and negative aspects of hard engineering measures to protect coastal environments, such as sea walls, breakwaters, groynes and gabions (wire-cages filled with rocks, called riprap).

Then examine the positive and negative aspects of soft engineering measures to protect coastal environments, such as beach nourishment, the relocation of property, the planting of mangroves, the stabilising of dunes and the creation of artificial reefs made from concrete or steel on the sea floor.

Researching tidal power

Using online sources or other reference materials, research tidal power and write a 400–500-word report. In order to do this, you will need to:

- identify and map locations in the world where tidal power has been developed
- describe how energy is generated by explaining how tidal power works, using visual sources
- evaluate the advantages and disadvantages of tidal power
- investigate the costs of establishing such schemes, given that tidal power is a renewable energy resource.

Emphasis should be on the quality of the mapping; the explanation of how underwater turbines use tidal energy to generate electrical power; the advantages (for example, it is a renewable energy resource) and disadvantages of such schemes (for example, the costs of implementation, the need for the right environmental conditions); and some analysis of the costs involved.

Source 7.6.1 Gold Coast, Queensland

GLOSSARY

coastal barrier a long sand island parallel to the coast

coastal zone the area in which the interaction between the sea and land processes occurs

coastline the area where the land meets the sea

continuous resource a renewable resource, the availability of which is not affected by human activity, for example the energy of the sun

ecotourism responsible travel to natural areas that conserves the environment and improves the wellbeing of the local people

hard engineering the controlled disruption of natural processes through the use of human-made structures

landuse zoning plans outlining how land can be used in an area

longshore drift the process by which sand moves along a beach shoreline as a result of waves approaching the shore at an angle

resonance the process whereby an outgoing low tide collides with the incoming high tide, causing a wave of water to be pushed into a bay

sand dunes long hills of sand formed by the wind

soft engineering the use of vegetation and other materials to 'soften' land–sea interactions

turbidity the amount of suspended sediment in water

upwelling the upward movement of water from deep in the ocean

CHAPTER 8

Human wellbeing

Enhancing the wellbeing of people living in the world's poorest countries is one of the great challenges facing humanity. In humanities and social sciences, the study of **development** is about identifying the ways in which **developing countries** can improve wellbeing and eliminate absolute poverty.

Since World War II and the subsequent decolonisation process in Africa, Asia and other parts of the world, the peoples and governments of the most **developed countries** have acknowledged that they have a responsibility to assist the world's poorest countries to improve the lives of their people. At one level, this is a simple matter of self-interest—if people in poorer countries have a greater income, they have more purchasing power and can generate more international trade, creating greater wealth for all. At another level, it is the moral responsibility of those living in the developed world to assist the poor. It is simply a matter of social justice.

This chapter focuses on the geographies of human wellbeing and examines the global pattern of human wellbeing and how it is measured. We also investigate the causes of global differences in these measures among countries. India is used as a case study.

Source 8.0.1 An Indian girl searches through garbage for scrap at a landfill site in New Delhi, India.

UNIT 8.1

Development and human wellbeing

The term 'human wellbeing' refers to people's quality of life. It takes into account the extent to which an individual, family, or larger social grouping (for example a community or even a whole country) can be characterised as being healthy, happy and prosperous. There are significant variations in the level of wellbeing experienced by people between andwithin countries.

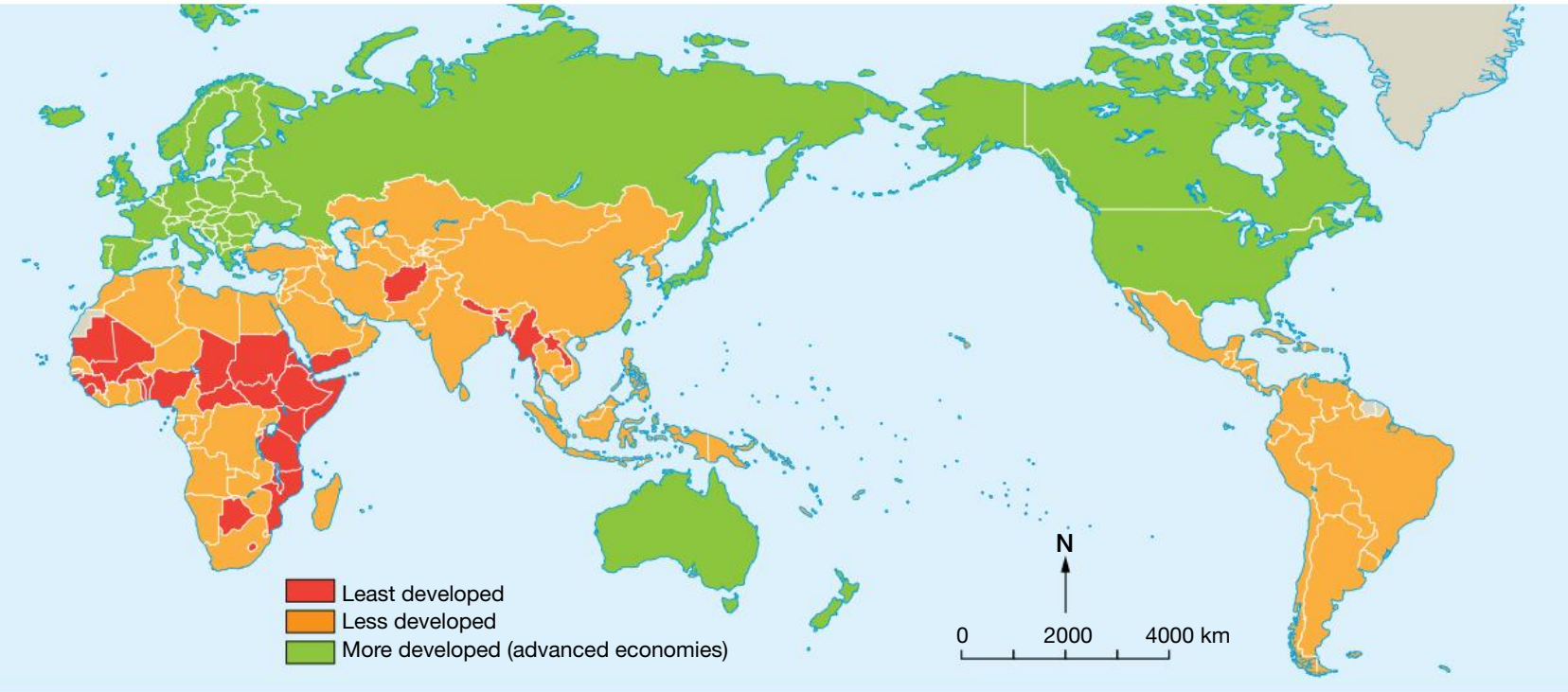
Development

'Development' is a contested term. How it is defined depends on the beliefs people hold, their perspective or view of the world. It can be defined as simply the outcome of **economic growth**, or it can be understood in terms of a dynamic, socio-economic process, the aim of which is a sustained improvement in people's quality of life (or wellbeing) as perceived by those affected by change.

Human wellbeing is often measured by the rate of economic growth. Such growth is driven by the consumption of goods and services. Development policies are often based on the belief that higher growth rates and greater affluence increase people's quality of life. If the gross domestic product (GDP) is rising, we should all be better off, but experience, in both developed and developing countries, shows that even when people have more money and material possessions, they do not necessarily become happier or more satisfied with their lives. Other, non-economic, factors also play a role.

Developed and developing worlds

Countries have traditionally been considered to be developed or developing. This division is becoming increasingly problematic, as some countries once described as 'developing' have emerged as major economic powers and their people enjoy a high level of wellbeing. A more commonly used division now is that of 'more developed' countries, 'less developed' and 'least developed'. The distribution of these three divisions is shown in Source 8.1.1. The more developed world accounts for 1.24 billion people; the less developed, 5.8 billion; and the least developed, 876 million.



Source 8.1.1 The more developed, less developed and least developed regions and countries

Source 8.1.2 Too many of the world's people still have an unacceptable standard of living.

Global inequalities

In early 2014, Oxfam, the international non-government aid agency, reported that the world's 85 richest people controlled wealth of $1.7 trillion, an amount equal to that held by the world's poorest 3.5 billion people. In other words, a small group of people, just enough to fill a double-decker bus, had accumulated as much wealth as that shared by half the world's people. This staggering figure highlights the inequalities evident in the world today. The wealth of the richest 1 per cent of the world's population was about $110 trillion, 65 times the total wealth of the bottom 50 per cent of the world's population.

Although poverty has been reduced, inequality has not. In the 20 years between 1990 and 2010, the number of very poor fell by half (as a percentage of the total population) in developing countries, from 43 per cent to 21 per cent—a reduction of almost one billion people. Despite such gains, 1.1 billion of the world's seven billion people still live below the internationally accepted extreme-poverty line of just $1.25 a day.

Poverty

Poverty is the state of human beings who are poor; that is, they have little or no material means of surviving—little or no food, shelter, clothes, healthcare, education and other physical means of living and improving their lives. Some definitions of poverty are relative, rather than absolute. The term 'poverty reduction' applies to measures that lift people out of poverty.

ACTIVITIES

Remembering and understanding

1. Explain what is meant by the term 'human wellbeing'.
2. Define development.
3. Countries have traditionally been described as 'developed' or 'developing'. Explain why this distinction is becoming difficult to make. What alternative terminology is used to overcome this problem?

Applying and analysing

4. Construct an annotated mind map to illustrate the characteristics of developing countries.
5. Study Source 8.1.1. Describe the distribution of the world's least developed countries.

UNIT 8.2

Measuring and mapping human wellbeing

Human wellbeing can be measured using qualitative (subjective) measures of how people perceive the quality of the life they experience, or quantitative (objective) measures, for example **life expectancy**, education levels and income.

When this data is mapped, spatial patterns emerge. These patterns, the reasons for them and the ways in which they change over time are of interest to geographers.

Qualitative indicators

The qualitative or subjective indicators of human wellbeing are those aspects of our standard of living that are difficult to measure, such as political freedoms, social opportunities and guarantees of personal security. They include human rights, the nature of governing institutions, the quality of the environment, the level of social participation and access to leisure. These aspects are about the capacity of the individual to exercise their rights, especially economic, cultural and social rights. They involve the elimination of poverty, inequities, suffering and injustice.

Quantitative indicators

There is a range of objective (measurable) indicators used to assess human wellbeing.

Gross national product per capita

When many people think about human wellbeing, they often focus on economic growth. It is not surprising, therefore, that gross national product (GNP) per capita is one of the most commonly used measures of human wellbeing. GNP per capita is the total value of goods and services produced within a country in a particular year, together with income received from other countries (for example interest and dividends), less similar payments made to other countries, divided by the country's population.

The use of GNP has been criticised for failing to accurately measure economic activity, especially in developing countries, where much of the activity takes place outside the **formal economy** or where data collection processes are often under-resourced. Other indicators used to measure economic growth are energy consumption per capita and employment. Such production-based indicators can be used to rank countries on the basis of their relative economic development. However, they tell us very little about the spatial and social inequalities in the distribution of benefits derived from economic growth, and they tell us nothing about the qualitative dimension of human wellbeing.

Composite quantitative measures

Several new indices have been introduced over the years to provide a more accurate insight into human wellbeing. These include a range of multiple component (or composite) measures such as the Human Development Index (HDI), the Inequality-adjusted Human Development Index (IHDI), the Multidimensional Poverty Index (MPI) and the Gender-related Development Index (GDI).

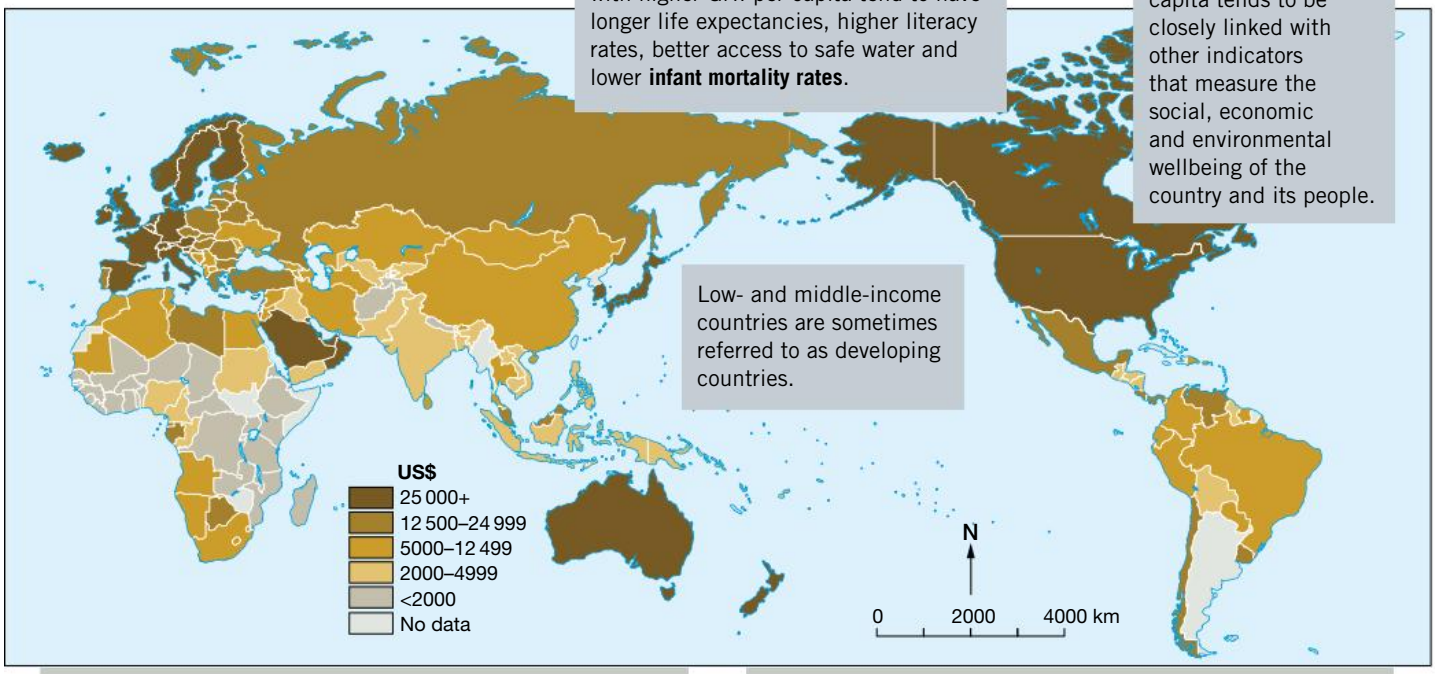
HUMAN DEVELOPMENT INDEX

The HDI allows for a range of developmental factors to be taken into account when measuring human wellbeing or progress. These factors are income, life expectancy and education. The index is not without its limitations. While it allows for easy comparisons between countries on an aggregate of the indicators, it does not provide an indication of the relative performance of each of the components. It also tells us little about inequalities in wellbeing within countries.

INEQUALITY-ADJUSTED HUMAN DEVELOPMENT INDEX

The IHDI seeks to measure the level of human wellbeing and the level of inequality. Under conditions of perfect equality, the IHDI is equal to the HDI, but falls below the HDI if inequality rises. IHDI is a measure of the actual level of human development (taking into account inequality), while the HDI can be viewed as an index of the potential human development that could be achieved if there is no inequality.

Source 8.2.1 Gross national income (GNI) per capita, 2013. World Bank, 2014



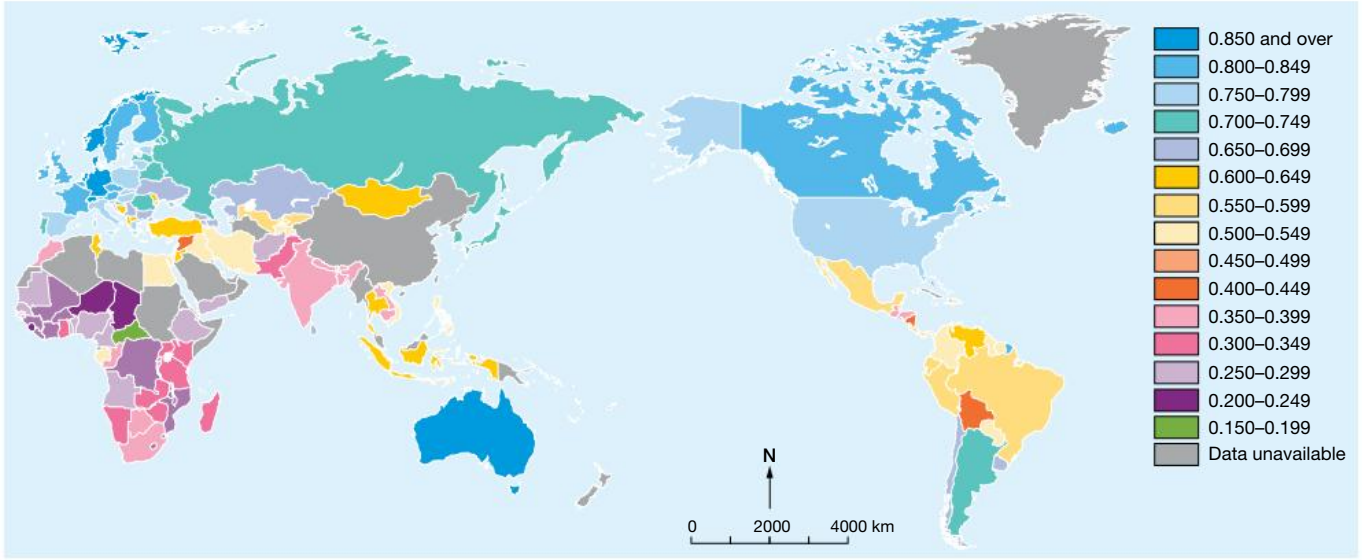
World's 10 richest countries, GNP per capita (purchasing power parity), 2014

Rank	Country	GNP per capita (PPP) in US$
1	Luxembourg	110 665
2	Norway	97 363
3	Qatar	93 397
4	Switzerland	84 733
5	Australia	61 887
6	Denmark	60 634
7	Sweden	58 887
8	Singapore	56 286
9	USA	54 629
10	Ireland	53 313

World's 10 poorest countries, GNP per capita (purchasing power parity), 2014

Rank	Country	GNP per capita (PPP) in US$
10	Malawi	253
9	Burundi	295
8	Central African Republic	378
7	Gambia	422
6	Niger	440
5	Madagascar	449
4	Liberia	461
3	Dem. Rep. of the Congo	475
2	Guinea	550
1	Ethiopia	567

Source 8.2.2 Inequality-adjusted HDI, 2014. Human Development Report, 2015



Source 8.2.3 HDI and IHDI by rank, 2015. United Nations Human Development Programme, 2015

HDI rank 2015	Country	Inequality-adjusted HDI 2015	Country
1	Norway	1	Norway
2	Australia	2	Switzerland
3	Switzerland	3	Netherlands
4	Denmark	4	Australia
5	Netherlands	5	Denmark
6	Germany	6	Germany
7	Ireland	7	Sweden
8	USA	7	Iceland
9	Canada	9	Ireland
10	New Zealand	10	Finland
11	Singapore	11	Canada
12	Hong Kong	12	UK
13	Liechtenstein	12	Slovenia
14	Sweden	14	Czech Republic
15	UK	15	Luxembourg
16	Iceland	16	Belgium
17	South Korea	17	Austria
18	Israel	18	France
19	Luxembourg	19	Slovakia
20	Japan	20	Estonia
21	Belgium	21	Japan
22	France	22	Israel

Source 8.2.3 shows the HDI ranking for the top 22 rated countries compared to their inequality-adjusted ranking. While the United States of America has the eighth-highest HDI, its ranking dropped to 27 when it was adjusted for income, health and educational inequality.

The Sustainable Development Goals (SDGs), which are part of the UN agenda called 'Transforming our world: The 2030 Agenda for Sustainable Development', are a set of 17 aspiration goals with 169 targets. Goals 1–6 directly address health disparities, primarily in developing countries. These six goals address key issues affecting people's wellbeing: poverty, hunger and food security, health, education, gender equality and women's empowerment, and water and **sanitation**.

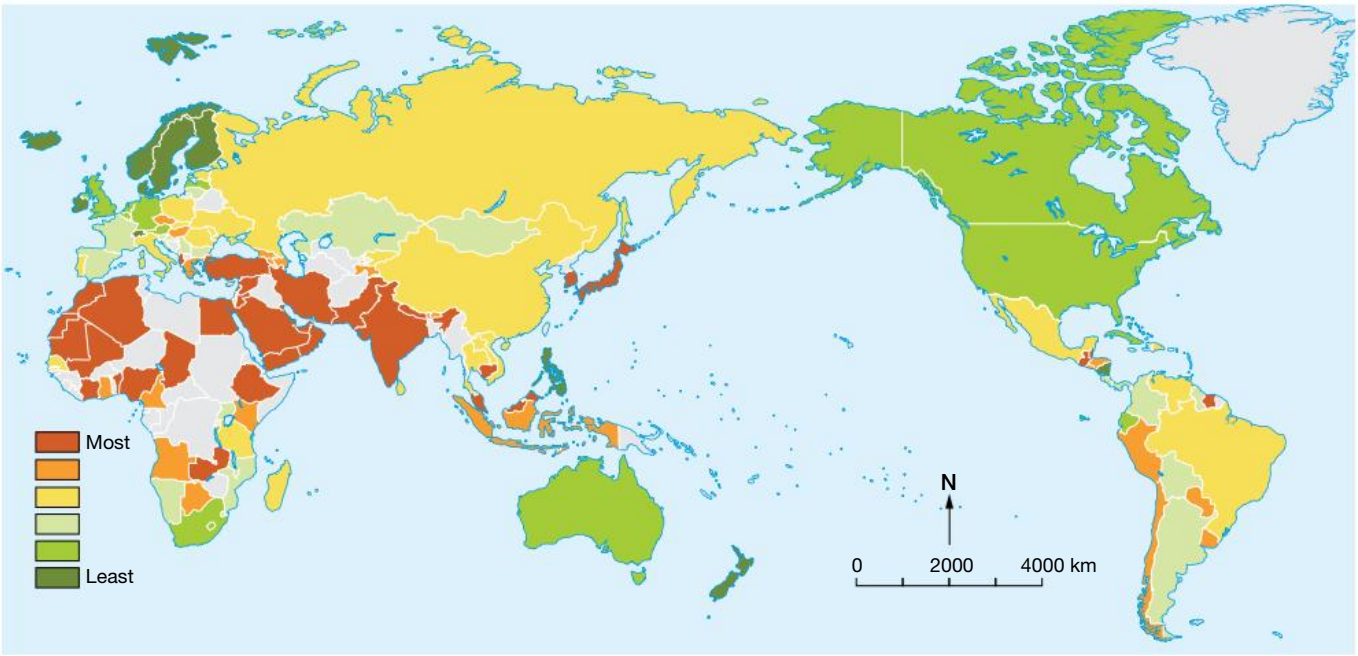
MULTIDIMENSIONAL POVERTY INDEX

The MPI was developed in 2010 by the United Nations Development Programme and the Oxford Poverty and Human Development Initiative. It uses a range of factors, beyond just income-based criteria, including nutrition and child mortality; years at school and percentage of children completing five years at school; percentage of households with electricity, proper sanitation, access to safe drinking water; and factors such as the type of household flooring and the type of cooking fuel used.

GENDER-RELATED DEVELOPMENT INDEX

The GDI measures the gap between the sexes in four key areas—health (life expectancy, etc.), access to education, economic participation (salaries, job type and seniority) and political engagement. Gender inequalities will result in a reduced HDI rank.

Source 8.2.4 The Gender-related Development Index, 2013
World Economic Forum, 2013



ACTIVITIES

Remembering and understanding

1 Distinguish between quantitative and qualitative data.
2 Explain why geographers are interested in mapping such data.
3 List the various quantitative measures of human wellbeing. Explain what each seeks to measure.
4 Explain what is meant by the term 'composite measure'.
5 Outline the disadvantages of relying on a narrow measure such as GNP per capita.
6 Explain what the IHDI seeks to measure.
7 Outline the qualitative measures typically used to measure human wellbeing.

Applying and analysing

8 Study Source 8.2.1. With the aid of an atlas, describe the distribution of countries classified as:
a 'high income'
b 'low income'.
9 Study Source 8.2.1 and Source 8.2.2. Outline any significant differences in the pattern of human wellbeing illustrated by GNP per capita and the IHDI.
10 Study Source 8.2.3. Identify the countries whose:
a IHDI is considerably below its 2015 HDI rank
b IHDI is considerably above its 2015 HDI rank.

Evaluating and creating

11 Undertake research to complete the following table. Based on the results, rank the overall wellbeing of each country, giving reasons.

Country	GNI per capita	Life expectancy	HDI	IHDI	MPI
Australia					
Mexico					
Turkey					
Uganda					
Niger					

UNIT 8.3

Changes in spatial wellbeing

Progress in human wellbeing

For 10 of the past 20 centuries, India was the world's 'wealthiest' country. In eight of the past 20 centuries it was the second-wealthiest country—China was the richest. So before the **Industrial Revolution**, levels of human wellbeing in India and China were generally higher than in Europe. This demonstrates that relative levels of human wellbeing change over both time and place.

In 2013, the United Nations (UN) reported that poverty reduction in the developing world was exceeding all expectations. It concluded that there was a 'global rebalancing' taking place, with higher growth in at least 40 poor countries, helping to lift hundreds of millions of people out of poverty and into a new global **middle class** (see Source 8.3.2). It also concluded that the wellbeing and prospects of so many people had never changed so dramatically in such a short period of time. Showing the way are nations such as Rwanda, Nepal and Bangladesh, where extreme (or absolute) poverty could disappear in the lifetime of present generations. Close behind are Ghana, Tanzania, Cambodia and Bolivia.

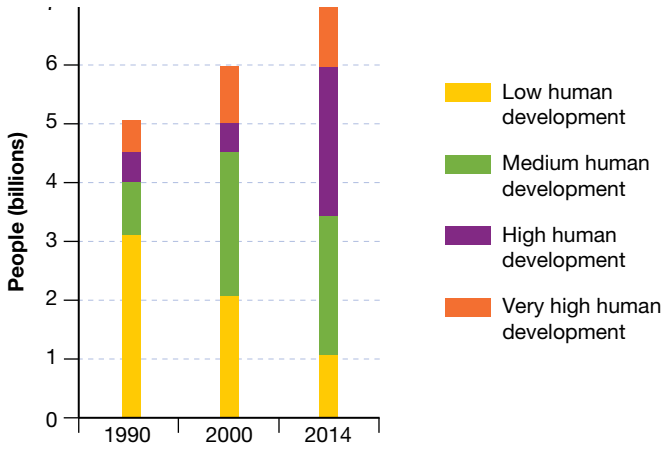
This improved global picture is the result of international aid and development projects investing in schools, health clinics, housing, infrastructure and improved access to water. The UN noted that trade is a key factor in improving conditions in countries such as Afghanistan, Ethiopia, Rwanda and Sierra Leone.

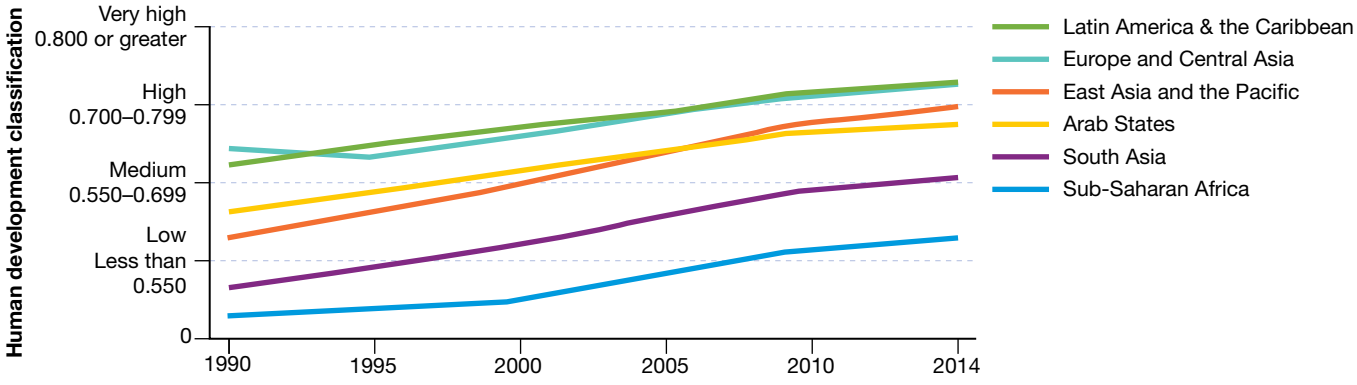
These improvements were observed in the past, when poverty was measured strictly in income terms, without taking into account factors such as health, education and living standards.

This improvement can, at least in part, be attributed to the success of the UN's Millennium Development Goals.

However, despite reductions in poverty levels worldwide, inequalities within countries continue to grow. The share of national income of the richest 1 per cent has grown significantly since 1980.

Source 8.3.2 Between 1990 and 2014 the number of people living in higher human development classifications rose, while the number of people living in countries in the low human development classification fell. Human Development Report 2014



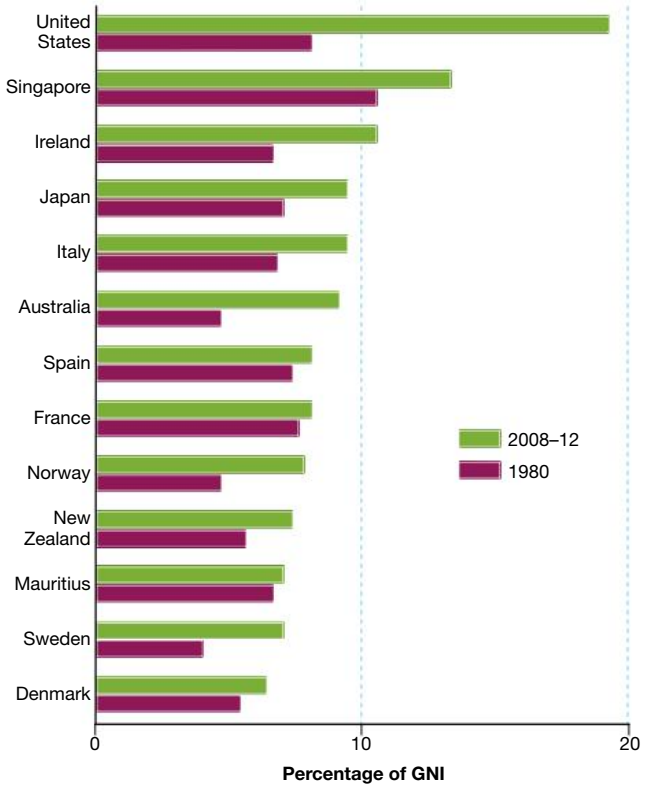


Source 8.3.1 Progress in human development has been steady throughout the developing world.

India's and China's changing fortunes

Experts conclude that at the dawn of the Industrial Revolution (about 1750), India's per capita income was some 10 per cent above that of England. They also argue that India's and China's technological sophistication once exceeded Europe's. For example, when Marco Polo visited China in the 1290s, he found that the Chinese were far ahead of the Europeans—he brought back to Europe porcelain, paper, paper currency and the compass. By 1800, levels of human wellbeing in China, India and Japan were lower than those in Europe. The balance had changed. The people of Europe (and North America) were then to enjoy generally higher levels of human wellbeing for the next two and a half centuries.

Source 8.3.3 Share of national income going to the richest 1 per cent of the population, selected countries, 1980 to 2008–12. Top World Incomes Database, 2013



Looking to the future

By 2020, there will be a major shift in the global balance of economic power compared with today. Emerging economies will grow in importance and China will overtake the United States in terms of GDP. Consumer markets in emerging economies will present great opportunities, but their rapid growth will pose a challenge to the global environment. Translating this economic success into improvements in human wellbeing will be a major challenge. China has had great success in alleviating poverty, but qualitative indicators of human wellbeing, such as human rights and the state of the environment, lag well behind those in most developed countries.

Australian wellbeing

Levels of human wellbeing have been high in Australia for much of its post-1788 history, and are now among the highest levels of human wellbeing in the world. Australia's Aboriginal and Torres Strait Islander peoples, however, experience levels of wellbeing well below those of non-Indigenous Australians.

ACTIVITIES

Remembering and understanding

1 Outline the key pieces of information relating to changes in the spatial wellbeing over time highlighted in this unit.
2 List some key technologies Marco Polo brought to Europe from China.
3 Explain how the spatial pattern of wellbeing is likely to change in the future.
4 What implications will the shift in the global balance of power have for human wellbeing?

Applying and analysing

5 Study Source 8.3.3. Estimate the difference in percentage between 1980 and 2008–12 for each country. Rearrange the graph from the greatest to the least difference. Describe any changes between Source 8.3.3 and the new list. Can you account for these differences?

Evaluating and creating

6 'Eradicating global poverty will solve all problems relating to human wellbeing.' Do you agree? Give reasons for your answer.

UNIT 8.4

Causes of spatial inequality: External factors

Legacy of history

Factors originating within countries or regions are not the only causes of poverty. Some of the commonly recognised external causes are historical.

Many of the world's poorest countries were once colonies, part of vast European empires. In the years immediately after World War II, most colonial powers gave up, or were forced to give up, their colonial territories. The legacy of **colonialism** remained and it influenced the development paths of many of the former colonies.

Many of the colonies were used as markets for finished products and other surpluses produced in the industrialised countries. At the same time, the colonies supplied raw materials and foodstuffs needed by the colonial power. Restrictions were often placed on colonies so that they could not produce goods that were already produced by the colonial power, or trade freely with countries other than the colonial power. Such arrangements were obviously designed to benefit the colonial power rather than the colony (see Source 8.4.1), and placed severe limits on the colony's economic activities. Many of these established trade relationships have continued with the wealthy countries, long after the demise of colonialism, continuing to dominate international trading relationships. The uneven distribution of wealth between countries is thus shaped by relationships established in the colonial era. Many of the former colonies still suffer from continued economic dependence on the more developed regions of the world.

Source 8.4.1 'The White Man's Burden (Apologies to Kipling)', *Judge Magazine*, 1899. The 'White Man's Burden' was originally a poem by Rudyard Kipling. It offered a critique of European imperialism and the notion that Western domination was for the benefit of the developing world.

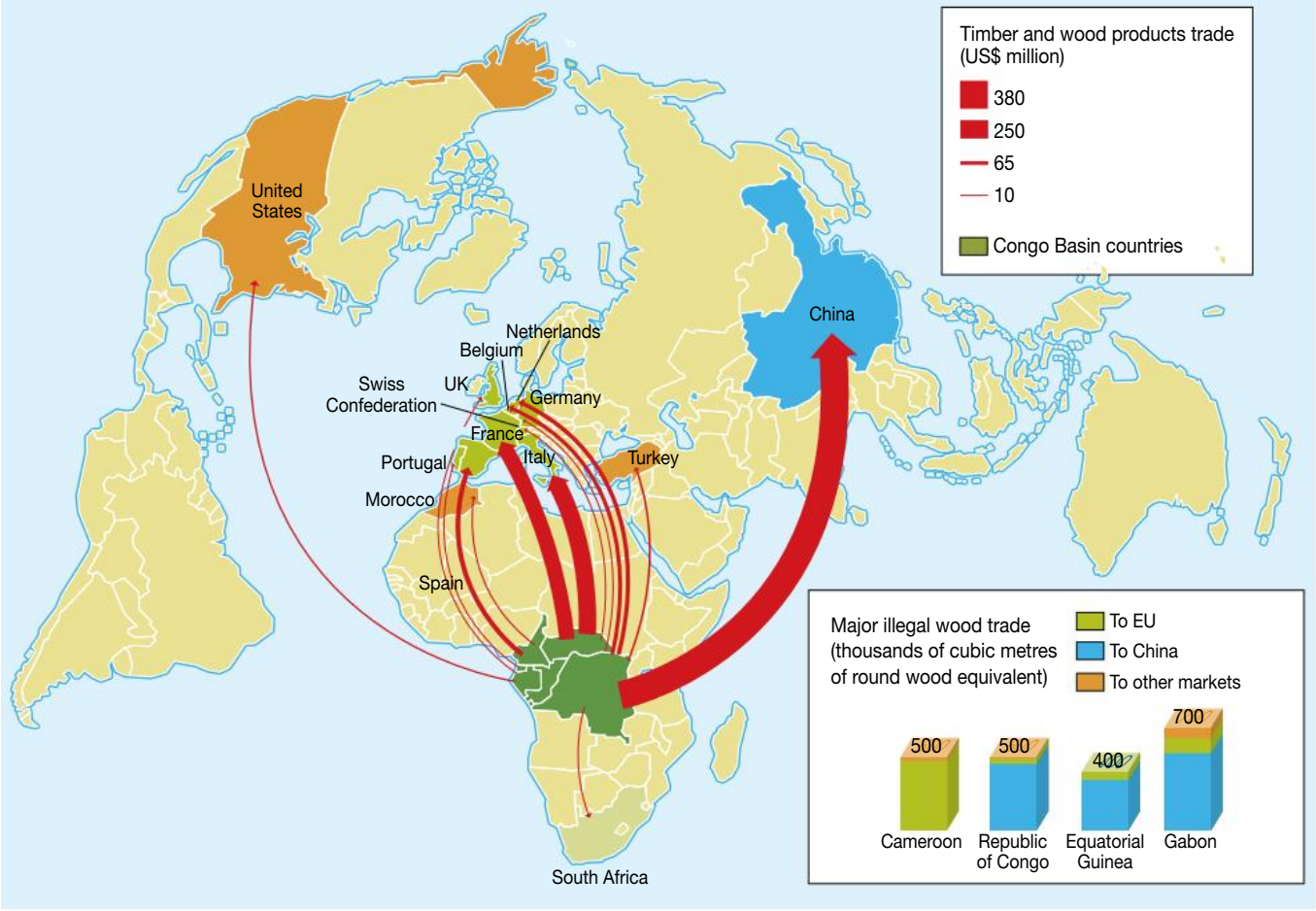
Trade imbalances

Most developing countries are still net importers of manufactured goods. Manufactured goods are generally more costly than the raw material exports that most developing countries are able to sell. Many poor countries are still dependent on the industrialised, wealthy countries for numerous high-cost imported goods. Meanwhile, these poor countries rely heavily on the exploitation of their natural resources (see Source 8.4.2 for an example) and the production of agricultural produce for their export earnings.

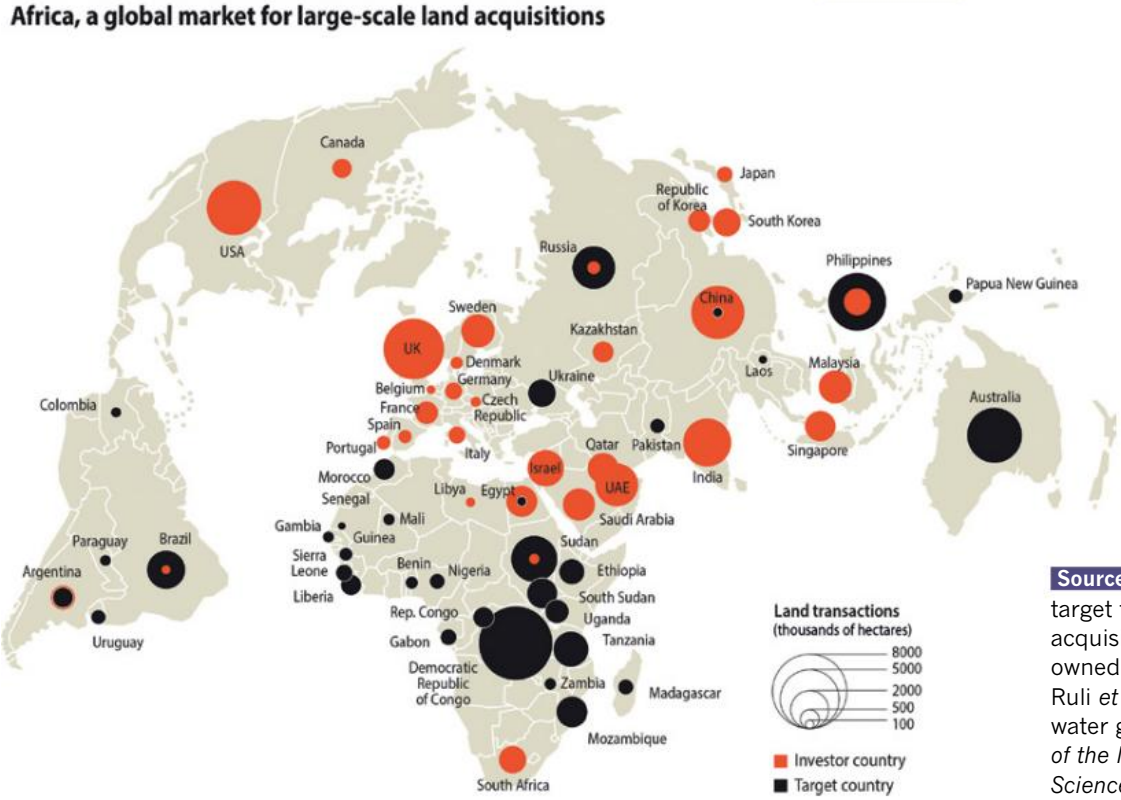
Developing countries have increased their share of global output, but they are usually at a disadvantage in world trade: the value of their imports often exceeds the income earned from their exports. As a result, they are likely to incur a debt rather than earn surplus income through trade.

In many poor countries, people have been encouraged to convert farmland from **subsistence production** to production of **cash crops** (such as tea, coffee and flowers), in order to earn export income. This can have devastating effects on poor local farmers, who forego more dependable subsistence farming systems in favour of cash cropping. In doing so, they become dependent on export income, which in turn depends on continued and consistent demand for cash crops. Their country also becomes highly dependent on unreliable sources of export earnings.

The large-scale acquisition of land throughout the developing world by developed nations, shown in Source 8.4.3, threatens traditional forms of agriculture in places such as Africa.



Source 8.4.2 Wood exports from the Congo Basin



Source 8.4.3 Africa is a target for large-scale land acquisitions by foreign-owned corporations. M.C. Ruli *et al.,* Global land and water grabbing, *Proceedings of the National Academy of Sciences,* June 2013

Source 8.4.4 Child workers on a cocoa farm, Sinikosson, Côte D'Ivoire

Transnational corporations

Transnational corporations (TNCs) are large organisations that have operations in several countries. The parent company is usually based in a developed country. TNCs frequently operate subsidiary companies in developing countries. Developing countries are attractive to TNCs because of their abundant supply of cheap labour, often accompanied by less stringent industrial relations laws regarding wages, hours of employment and working conditions. They also appeal because of the lower cost of inputs (such as land and services) and the availability of cheap raw materials.

Source 8.4.4 shows a child worker on a cocoa farm. There have been widespread reports of child slavery in the least developed countries that rely on exports.

The goods manufactured cheaply in poor countries are sold to consumers in wealthy countries (or the rich elite in poor countries). These items are frequently beyond the financial reach of those employed to manufacture them.

Dependency on development assistance

Many poor countries are heavily dependent on development assistance (or overseas aid) supplied by wealthy countries.

There are three major types of aid.

- ***Bilateral aid:*** This is development assistance provided by governments of wealthy countries to governments of developing countries.
- ***Multilateral aid:*** Multilateral aid is given by international institutions, such as the World Bank, the International Monetary Fund (IMF) and the Asian Development Bank. This aid is frequently provided in the form of loans.
- ***Non-governmental aid:*** This is distributed by non-governmental, non-profit organisations (NGOs), which receive most of their income from donations by the general public.

There is considerable debate about how aid should be distributed. Some donors are concerned about corruption. Others fear that aid is being diverted to projects that do little, if anything, to enhance human wellbeing. There is, however, a shift towards poverty-focused projects that directly involve poor people in the design of projects intended to assist them to improve their own lives.

ACTIVITIES

Remembering and understanding

1. Describe the nature of the relationship between the colonial power and the colony prior to independence.
2. Outline the nature of the relationship after independence.
3. Outline how developing countries are often disadvantaged through their engagement in world trade. What impacts can the imbalance in trade have on them?
4. Explain why developing countries offer an attractive base for TNC activities.
5. Distinguish between bilateral, multilateral and non-governmental aid.

Applying and analysing

6. Construct a mind map to illustrate the external factors that have an impact on human wellbeing in a developing country.
7. Study Source 8.4.1 then do the following tasks.
   - **a** Identify the characters shown carrying the peoples of the colonies in baskets. Who do they represent?
   - **b** Identify the goal being pursued and name the barriers encountered.
   - **c** Identify the perspective from which the cartoon is drawn.
   - **d** Would it be appropriate to draw such a cartoon today? If not, why not?
8. Study Source 8.4.2. Identify the main markets for timber and wood products harvested from the tropical forests of the Congo Basin. Why do you think this fragile and ecologically significant natural resource has been exploited?
9. Study Source 8.4.3 then do the following tasks.
   - **a** Identify the five largest investor countries.
   - **b** Identify the regions of the world targeted by those seeking to acquire land.
   - **c** Describe the overall pattern that emerges.

Evaluating and creating

10. Conduct research into a developing country that was colonised in the past, and assess the impact of colonisation on the chosen country's economic activity.

UNIT 8.5

Causes of spatial inequality: Internal factors

Population growth

A country's ability to provide for the needs of its people is affected by the growth rate of its population. If the rate of population growth exceeds the rate of economic growth, for example, the share of the 'economic pie' each people gets becomes smaller. Similarly, a country's ability to provide medical and educational facilities, infrastructure and adequate food supplies is immediately affected by any rise in **fertility rates**.

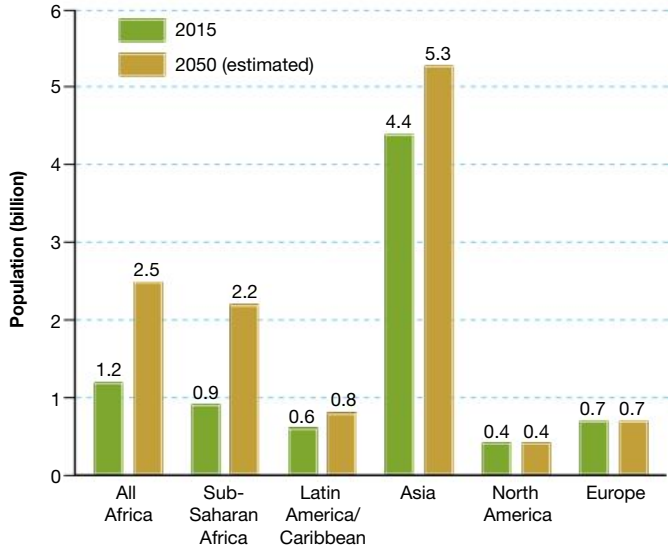
Predicting population growth

With a projected growth of 1.3 billion between 2015 and 2050, the population in Africa will grow more than any other world region. Virtually all of that growth will be in the 51 countries of sub-Saharan Africa, the region's poorest countries. Even this projection assumes that birth rates will decline steadily in all countries of sub-Saharan Africa because of an increase in the use of family planning. If birth rates do not decline steadily, future projections of population growth will have to be increased.

The world's population is projected to reach 9.8 billion by 2050. Most of this growth will take place in those countries least able to cope. While the total population of developed countries will remain at about 1.3 billion, the population of the world's least developed 49 countries is projected to double from about 938 million in 2015 to 1.9 billion by 2050.

Africa is expected to be home to 2.4 billion people—a quarter of the total world population—by 2050, up from its current population of about 1.2 billion. This growth is a consequence of the high fertility rates in Africa, which at 4.8 children per woman now, is almost twice the global average of 2.5 children per woman. Nigeria, the most populous nation in Africa, is expected to have a population of 444 million by 2050.

Source 8.5.1 Population growth by region, 2015 and 2050. UN 2015



Resource base

The differing levels of wellbeing that people experience can be partly attributed to the resource base available to communities or countries. Some countries have been able to generate considerable wealth from the exploitation of natural resources. The United Arab Emirates, for example, has been able to generate vast wealth by exploiting oil reserves. Other countries, however, have only limited opportunities to generate income from the exploitation of natural resources.

When a country's biophysical environment (that is, its climate, soils and landforms) is capable of supporting a range of agricultural activities, the country has the potential to become self-sufficient in food production. Surpluses can be traded internationally to generate capital for investment in other areas. If the environment is incapable of supporting large-scale food production, a country may be forced to rely on costly imports to meet the needs of its people.

A lack of natural resources need not be an impediment to the enhancement of human wellbeing. Japan, for example, has few natural resources but has been able to achieve a high level of wellbeing by importing raw materials and exporting manufactured goods.

Political instability

Attempts to alleviate poverty and improve human wellbeing can be hampered by political instability, which can cause war and civil unrest, weak political institutions and corruption. Instead of funds being devoted to development-related activities and projects, or the enhancement of **social infrastructure**, which may improve levels of human wellbeing, they are often diverted to finance the activities of the military and police forces. Conflict can result in damaged infrastructure, destruction of crops, displacement of people and disruption of the economy.

While much of the present-day political instability in Africa is internal, its origins often lie in the artificial national boundaries. These are a product of European colonial expansion, which divided Africa into colonies without taking local interests into consideration.

Debt burdens

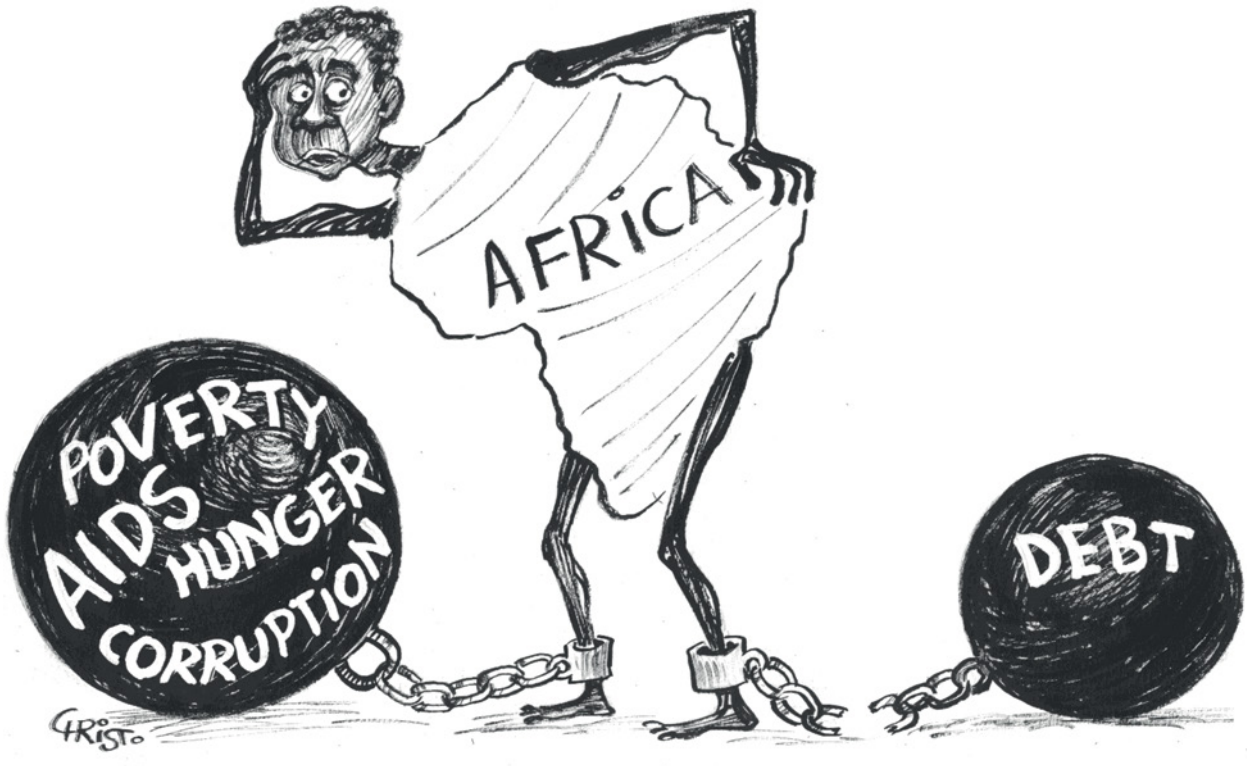
Under pressure to meet debt accumulated in the early post-colonial era, many developing countries sought to increase export earnings by allowing the exploitation of natural resources such as native forests and mineral deposits. For the same reason, they encouraged the production of cash crops for sale to the consumers in developed countries. Many poor countries struggle to cope with the burden of debt repayments (see Source 8.5.2).

The debt burden of developed countries has been at the centre of a campaign by a range of NGOs. The global Make Poverty History campaign, for example, has campaigned for global debt relief.

Militarisation

Once colonies achieved independence, they were faced with concerns about their security. These concerns were reinforced by ruling elites, who often saw a strong military as a means of protecting their position of privilege. Expenditure on armaments contributed to the newly autonomous country's debt burden and used resources that could have been devoted to meeting the basic needs of its people.

Source 8.5.2 Africa's debt burden limits the prospects of advancing human wellbeing.



Source 8.5.3 Women returning home with fuelwood, Burkina Faso, Africa. A reliance on fuelwood in areas with rapidly growing populations contributes to desertification.

Environmental degradation

Environmental degradation in developing countries is both a symptom of poverty and a contributor to ongoing disadvantage. At the local level, people are often engaged in practices that can cause environmental degradation. This is frequently the result of the struggle for survival. Population growth and increased use of land for commercial agriculture can force subsistence agricultural activities into more marginal areas. This results in land being cleared for agricultural purposes or to access timber for **fuelwood** (See Source 8.5.3). Furthermore, the overuse of the land results in the loss of soil fertility. At the national level, the need to repay foreign debt means that governments have encouraged the extension of cash cropping, mining and forestry, frequently at the expense of the environment.

In some areas, such as the Sahel region of Africa which extends across Africa south of the Sahara Desert and north of the savannah land, overuse of land and destruction of ground cover have led to rapid desertification. Because the boundaries of the desert are gradually being extended, arable land is subject to increasing pressure through overuse. Subsistence farmers simply do not have the resources to reverse these processes or to be able to reduce their use of the land. Thus, the land is further degraded and becomes less fertile, and the poor become still poorer. Today, there is growing concern about the impacts of climate change on the world's most vulnerable people.

Compounding issues

There are a number of issues that compound the difficulties faced by developing countries.

- Low levels of human wellbeing hinder development. It can be argued, for example, that poor health can reduce the productivity of people. Similarly, low levels of national income mean that some governments do not have the capacity to invest in healthcare services and education facilities.
- The priorities of governments may affect human wellbeing within countries. For example, one government may choose to spend the limited available capital on meeting the basic needs of the poor majority. Another government may direct it towards priorities such as the protection of the interests of wealthy elites or military expenditure.
- The persistence of rigid social systems and cultural traditions can hinder improvements in wellbeing for some social groups or communities.

ACTIVITIES

Remembering and understanding

1 Explain the relationship between population growth rates and the prospects for increasing levels of human wellbeing.
2 Account for the expected growth in Africa's population in the period to 2050.
3 Explain the link between a country's resource base and levels of human wellbeing. Are there any exceptions?
4 State how political instability affects efforts to enhance human wellbeing.
5 Explain how environmental degradation is both a symptom of poverty and a contributor to ongoing disadvantage.
6 State the cause of desertification in the Sahel region of sub-Saharan Africa.

Applying and analysing

7 Study Source 8.5.2. Explain the point the cartoonist is making.
8 Study Source 8.5.1 then do the following tasks.
   a Calculate the percentage increase in the projected population of Africa, sub-Saharan Africa and Asia. Which region will show the greatest rate of increase?
   b Compare the rate of increase in sub-Saharan Africa with 'All Africa'.
   c Which regions will have no net increase in population between 2013 and 2050?
9 Investigate the use of fuelwood in developing countries. Include in your report the following information:
   a what the fuel is used for
   b how collection results in land degradation
   c alternatives to fuelwood.

Human wellbeing: The issues

Barriers to improving human wellbeing

There is great diversity between and within all countries. A variety of challenges more commonly confront developing countries than developed countries. These challenges have an impact on people's wellbeing and act as a barrier to development.

Poverty

Extreme poverty is most common in areas where poor health and lack of education deprive people of productive employment; environmental resources have been depleted or spoiled; and corruption, conflict and poor governance result in the waste of public resources.

According to the World Bank 12.7 per cent of the world's population (or 896 million people) lived at or below $1.90 a day in 2013. That's down from 37 per cent (1.95 billion people) in 1990 and 44 per cent (1.99 billion) in 1981. Progress, however, has been slower at higher poverty lines. Over 35 per cent of the world's population (or 2.1 billion people) lived on less than US$3.10 a day in 2013, compared with 66 per cent (2.9 billion people) in 1990. Sub-Saharan African and southern Asian countries account for about 40 per cent of the world's population living in extreme poverty.

Low per capita income

In general, developing countries tend to have low levels of per capita income compared to wealthier countries. By the end of the first decade of the 21st century, the richest 20 per cent of the population had three-quarters of the world's income, while the poorest 40 per cent between them earned only 5 per cent of the world's income. The very poorest 20 per cent of the global population had only 1.5 per cent of the world's income.

Lack of adequate shelter

Approximately 33 per cent of the urban population in the developing world, or about 880 million people, lived in slums in 2015. The proportion of the urban population living in slums was highest in sub-Saharan Africa (61.7 per cent) followed by South Asia (35 per cent). While these percentages are declining, absolute numbers are not, due primarily to the fast pace of urbanisation.

Lack of access to clean water and sanitation

Some 663 million people still rely on water from unsafe sources. Eighty-three per cent of these people (636 million) live in rural areas. Of those who have access to a source of safe drinking water, 38 per cent do not enjoy the convenience and associated health and economic benefits of piped drinking water at home. Instead, they spend considerable time and energy queuing up at public water points and carrying heavy loads of water over long distances.

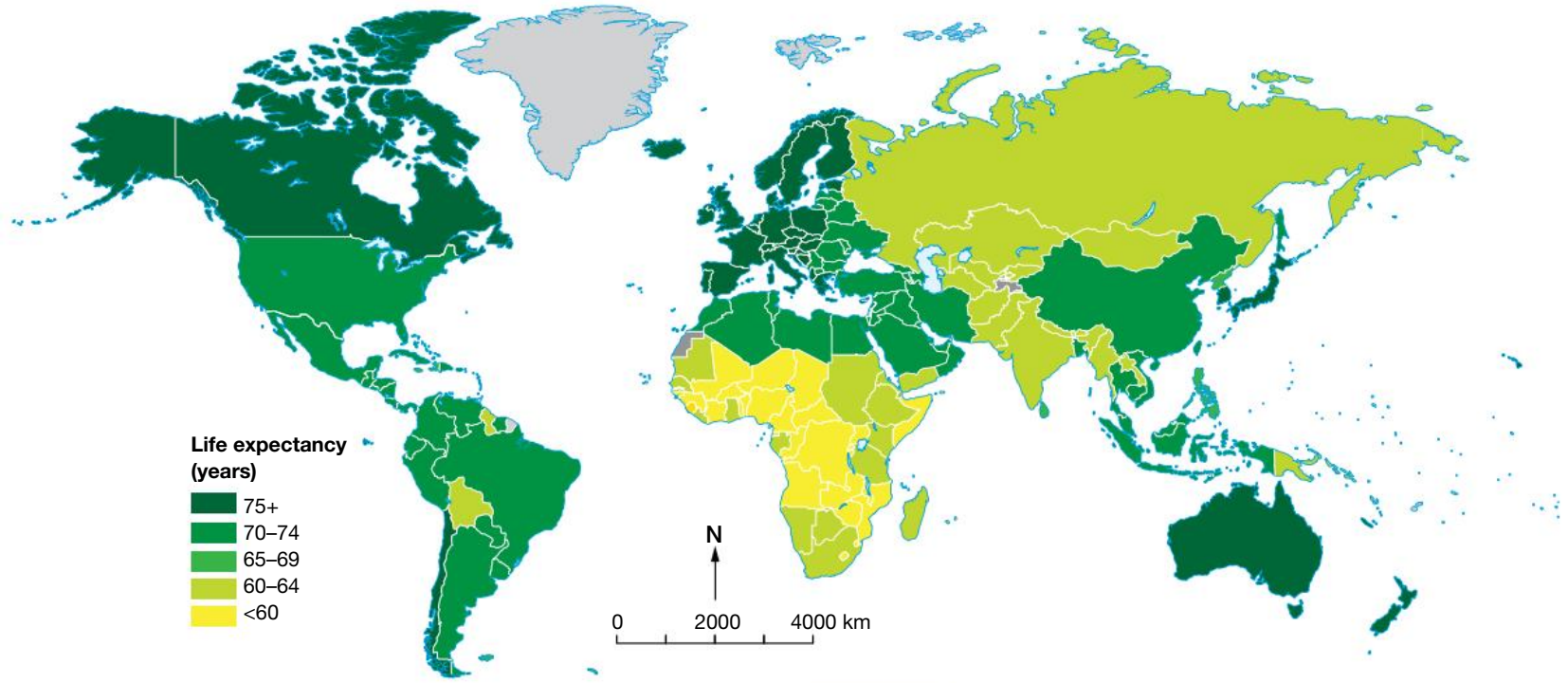
The United Nations estimates that 2.5 billion people do not use an **improved sanitation facility**. In sub-Saharan Africa, 44 per cent of the population uses either shared or unimproved facilities, while in southern Asia, the proportion of the population using shared or unimproved facilities has declined to 18 per cent, but open defecation remains the highest of any region (39 per cent). Between 1990 and 2015, 2.1 billion people gained access to a flush toilet or otherimproved sanitation facility.

Dietary deficiencies

Dietary deficiencies result from inadequate food intake. The amount of food available may be inadequate or it may be of poor quality. In 2015, 25 per cent of the world's population was classified as undernourished. Most undernourished people lived in developing countries. Women and children are the most vulnerable. India alone has 65 million undernourished children. Worldwide, 495 million women and children under five years of age are undernourished—150 million, or one in four in Africa; 315 million, or one in seven in Asia; and 30 million, or one in eleven in Latin America and the Caribbean.

Low life expectancy

Diseases originating from contaminated water supplies, inadequate **sanitation**, poor nutrition, inadequate of inappropriate health care and poor hygiene disproportionately affect the poor. Many diseases in poor countries are preventable and treatable. Poverty often prevents people from accessing these treatments and medications. Gastroenteritis, which can readily be treated, results in about 1.8 million child deaths annually. Source 8.6.1 illustrates the differences in life expectancy for people in wealthy and poor countries.



Source 8.6.1 Life expectancy. Population Reference Bureau, 2015

Source 8.6.2 Pneumonia, diarrhoea, malaria, measles, HIV/AIDS and malnutrition are the primary killers of children in developing countries. Many of these diseases are preventable through vaccination.

Low access to health services

The availability of health services is generally low in developing countries. In Africa, countries such as Niger, Malawi and Tanzania have just two physicians per 100 000 people, while Uganda and Angola have eight. In Australia, there are 374 physicians for every 100 000 people, while the equivalent measure in Belgium is 449 for every 100 000 people.

High maternal mortality rates

Maternal mortality is defined as the death of a woman while pregnant or during childbirth, or in the days after giving birth or having a pregnancy terminated.

High rates of maternal mortality occur in the same countries that have high rates of infant mortality. This reflects a lack of access to skilled medical care during childbirth and poor nutrition. Over 90 per cent of maternal deaths occur in developing countries.

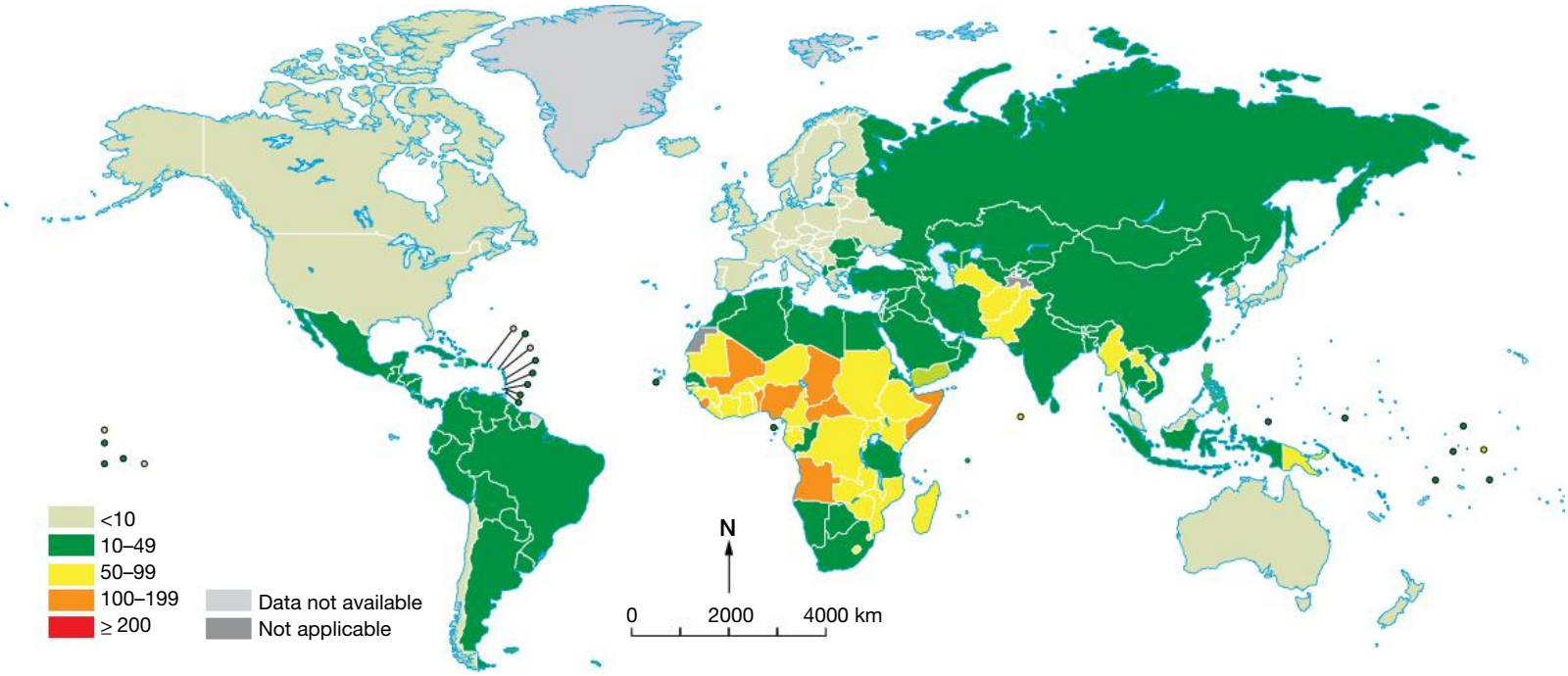
Significantly, however, the global maternal mortality ratio has declined by 47 per cent over the last two decades, from 400 maternal deaths per 100 000 live births to 210 between 1990 and 2010. All regions have made progress, with the highest reductions in eastern Asia (69 per cent), northern Africa (66 per cent) and southern Asia (64 per cent).

High infant mortality rates

In the less developed countries, infant mortality rates were 45 per 1000 live births in 2012, and 62 per 1000 in the least developed countries. This compares with just five deaths per 1000 in the more developed countries. The under-five mortality rate is particularly high in some of the poorest countries—more than 120 per 1000 live births in some countries. In Afghanistan, the rate was 129 per 1000 live births. Australia's rate was just 3.9. Six million children under the age of five died in 2015.

Relatively high levels of illiteracy

The adult literacy rate is generally 99 per cent in developed countries, compared with 76 per cent in developing countries. In the least developed countries, the adult literacy rate is just 54 per cent.



Source 8.6.3 Infant mortality. World Health Organization, 2014

Worldwide, 57 million children were not attending school in 2013. Thirty million of these were in sub-Saharan Africa. While progress has been made in the number of children receiving a primary education, the rate of improvement is slowing. Between 2000 and 2011, the number of children not attending school declined by almost half, from 102 million to 57 million, but between 2008 and 2011, the number of children of primary school age not attending school fell by only 3 million.

Girls are more likely to not to attend school than boys in both primary and lower secondary age groups, even girls living in the richest households.

High rates of population growth

Worldwide, annual population growth is 2.5 per cent; in developed countries it is 1.5 per cent, in developing countries it is 2.6 per cent, and in the least developed countries it is 4.4 per cent. Growing populations in the world's poorer countries place added strain on already limited national resources. This creates additional demand for employment, schooling, infrastructure, health and other services.

Child exploitation

Hundreds of millions of children are exploited. Much of this occurs in developing countries. The worst types of exploitation are **child labour** and trafficking, child marriage and sexual exploitation.

Indebtedness

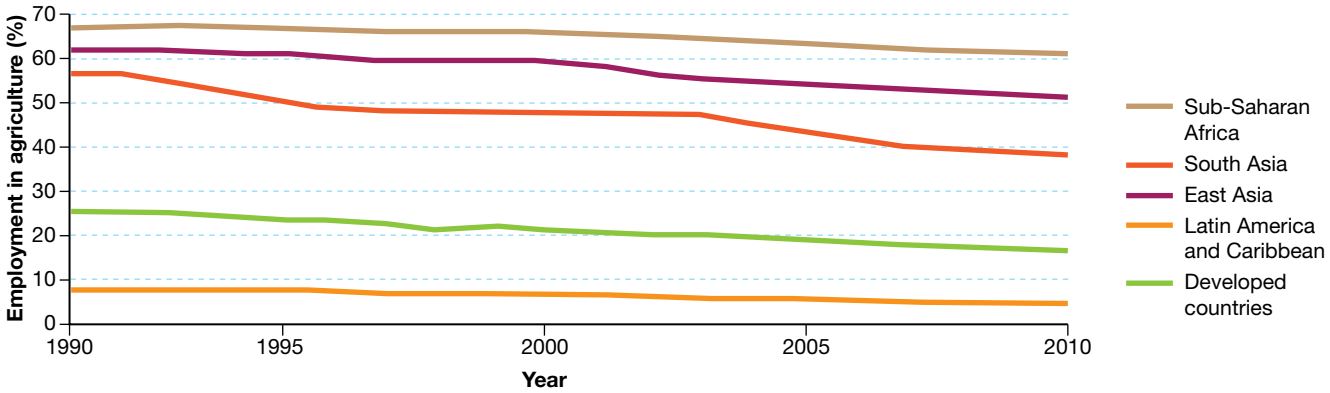
Developing countries tend to be heavily indebted. Initiatives to 'forgive' debt since the early 1990s have reduced the debt burden of many countries. Despite this, on average, the total debt service burden of developing countries still represents 13 per cent of total exports of goods and services. The external debt of many developing countries drains public budgets, using the resources needed to support essential service provision and improve levels of human wellbeing. For debt reduction initiatives to be effective, the money saved needs to be used to boost social programs and reduce poverty.

Emphasis on primary production

Worldwide, one-third of the global workforce is engaged in agriculture, often subsistence production. Although the process of urbanisation has been accelerating in developing countries, the greater percentage of their labour force is still engaged in agricultural activities, as is outlined in Source 8.6.4. The percentage of the population engaged in agriculture was less than 2 per cent in the United States in 2010. About 60 per cent of all child labourers—129 million girls and boys—work in agriculture. More than two-thirds of them are unpaid family members.

Rural–urban inequality

There continues to be a significant gap between the wellbeing of those living in rural areas compared with people living in urban centres. In 2011, only 53 per cent of births in rural areas were attended by skilled health



Source 8.6.4 Employment in agriculture is falling worldwide, but the sector still accounts for more than half of total employment in sub-Saharan Africa and South Asia. FAO 2010

personnel compared with 84 per cent in urban areas. Eighty-three per cent of people without access to a source of improved drinking water live in villages.

Low levels of technology

In developing countries there are comparatively low levels of technology and science-based applications in agriculture and industry. Labour-intensive methods of production still dominate in both agriculture and industry in the world's poorest countries.

Low levels of energy consumption

Low national incomes are often reflected in low levels of public infrastructure provision. In 2015, 1.2 billion of the world's people were living without electricity. Most of these people (587 million) lived in Africa, followed by South Asia (493 million) and East Asia (182 million).

In Afghanistan, for example, only 30 per cent of the population has access to electricity. Worldwide, 80.5 per cent of people have access to electricity. In developing countries, the figure is 74.7 per cent. In the United States, consumption of electricity was 87 217 kilowatt-hours of electricity per person in 2012 compared with India's 6280 kilowatt-hours. The worldwide average was 21 283 kilowatt-hours of electricity per person.

Lack of commitment to environmental sustainability

The growth in global carbon dioxide emissions is accelerating; emissions are now more than 46 per cent higher than they were in 1990. Forests continue to be lost at an alarming rate. Overexploitation of marine fish stocks is resulting in diminished yields. Birds, mammals and other species are heading for extinction at an ever faster rate, with declines in both populations and distribution.

ACTIVITIES

Remembering and understanding

1 Outline the extent of extreme poverty in the world.
2 State the extent to which access to water and sanitation impacts negatively on human wellbeing.
3 Identify how many people are estimated to be involved in primary production around the world.

Applying and analysing

4 Outline the extent to which hunger and diet deficiencies exist in the world today. What are the consequences of poor nutrition?
5 Outline the relationship between the provision of electricity infrastructure and electricity consumption per capita. What other factors may influence energy consumption?
6 Construct an annotated mind map to illustrate the characteristics of developing countries.
7 Draw up a list of improvements that have taken place in human wellbeing since 1990.
8 Study Source 8.6.1 and Source 8.6.3.
   a Describe the distribution of:
      i the lowest and highest life expectancy rates
      ii the lowest and highest infant mortality rates.
   b Is there a link between the two maps? Explain.
9 Study Source 8.6.4. Using data from the graph, describe the trends in agricultural employment.

UNIT 8.7

NGOs: Making a difference

Non-governmental organisations

A non-governmental organisation (NGO) is any non-profit, voluntary citizens' group organised on a local, national or international scale. It is typically task-oriented and driven by people with a common interest. NGOs perform a variety of service and humanitarian functions. These include bringing citizens' concerns to governments, advocating and monitoring policies, and encouraging political participation through provision of information. Some NGOs are organised to deal with specific issues, while others promote a range of causes. They provide analysis and expertise, serve as early warning mechanisms, and help monitor and implement international agreements. People join NGOs because they believe they can achieve more by working with others to influence the decision-making processes of governments and large corporations.

NGOs and development assistance

NGOs are active in addressing a range of challenges facing developing countries, such as:

- water and sanitation: Lifewater International, WaterAid, Safe Water Network, Water for People and Wash, Charity: Water
- healthcare: Médecins Sans Frontières, (see Source 8.7.1), CARE International and the Red Cross
- worker exploitation: Global Exchange, Clean Clothes Campaign and Rugmark
- wellbeing of children: Save the Children, Smith Family
- human rights: Amnesty International and Human Rights Watch
- development (range of issues): Oxfam, World Vision.

NGOs in the field

Many NGOs are able to reach the most marginalised and vulnerable people in developing countries. They are able to work in areas that are difficult to access because of armed conflict or civil unrest because they do not take sides between warring factions. Many also have expertise in working in emergency situations where fast and flexible responses are essential. NGOs focused on development-related projects are also skilled in empowering local communities. Their initiatives are likely to have long-term benefits only when recipients of the assistance are involved in the planning, design, construction, operation and maintenance of projects. This creates a sense of ownership and responsibility for a project. NGOs are also skilled in getting the most out of even small investments of capital.

Source 8.7.1 Médecins Sans Frontières volunteer medical personnel provide emergency assistance in a field hospital.

Amnesty International

Amnesty International is an independent NGO with over three million supporters in more than 150 countries and territories. The vision of Amnesty International is to enhance human wellbeing through the creation of a world in which every person enjoys all the human rights enshrined in the Universal Declaration of Human Rights and other international human rights instruments. One way in which this NGO works to achieve its mission is to act on behalf of some of the most vulnerable members of society.

Amnesty International plays a very specific role in the international protection of human rights by focusing its activities on prisoners.

- It works to secure the release of prisoners of conscience. These are people detained for their beliefs, colour, gender, ethnic origin, language or religion, who have not used or encouraged violence.
- It works for the fair and prompt trials of all political prisoners. It also works on behalf of people who have been detained without charge or trial.
- It opposes the death penalty, torture and other cruel, inhumane or degrading treatment or punishment.

Amnesty International seeks to raise public awareness about human rights abuses (see Source 8.7.2) and mobilise public opinion by having its supporters participate in letter-writing campaigns. Written appeals calling for the release of specific prisoners of conscience are sent to government leaders accused of suppressing prisoners' human rights.

Amnesty International protests are examples of active citizenship. This involves people taking seriously their responsibilities as citizens and becoming active participants in the political process.

Source 8.7.2 Amnesty International protest in London, 2007, against inhumane treatment of prisoners at the US military prison at Guantanamo Bay, Cuba.

ACTIVITIES

Remembering and understanding

1. Explain what an NGO is. What challenges in developing countries do they work to address?
2. Outline the ways in which NGOs achieve their aims in the field.
3. Explain what Amnesty International is. What are the aims of this organisation?
4. Describe how Amnesty International acts to protect people's human rights.

Applying and analysing

5. As a class, discuss the ways in which NGOs act to increase public awareness of particular issues and influence decision-makers.
6. Conduct a class brainstorm on the following question: 'Why would I want to join an NGO?'

Evaluating and creating

7. Design a sticker that highlights the issues addressed in this unit. Use design or desktop publishing software for a professional finish.
8. Select one of the NGOs listed in this unit. Access the NGO's website. How effective is the website in conveying the origins and mission of the organisation, and outlining the main issues it deals with?

Access to water and sanitation

One of the targets of the Millennium Development Goals was to halve the percentage of people without sustainable access to safe drinking water and basic sanitation between 1990 and 2015. Although this target was met in 2010, nearly 800 million people still rely on unimproved water sources (surface water from lakes, rivers, dams, or unprotected dug wells or springs) for their drinking, cooking and personal hygiene.

Improved sources of water

Access to an 'improved water source' refers to the availability of a clean, safe and reliable source of drinking water. Improved drinking water sources include piped water on premises (a piped household water connection located inside the user's dwelling, plot or yard) and other improved drinking water sources (public taps or standpipes, tube wells or boreholes, protected dug wells, protected springs and rainwater collection).

Did you know?

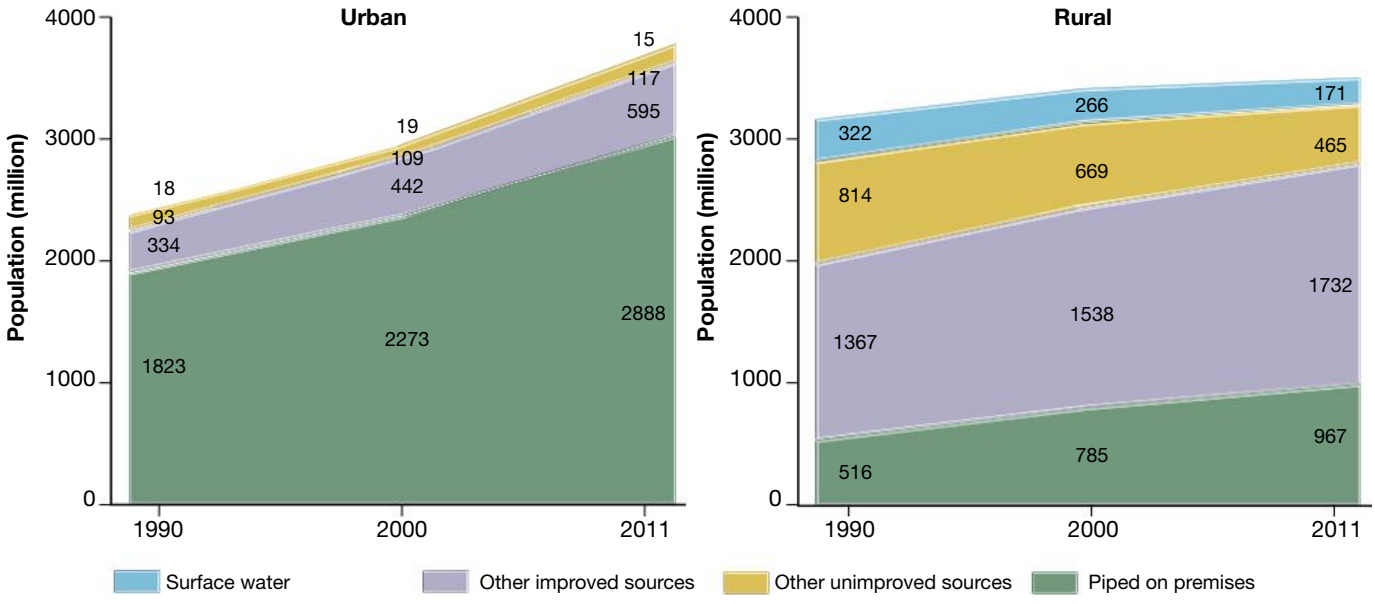
Currently, more than two-thirds of the population in Africa must leave their home to fetch water for drinking and domestic use.

Access

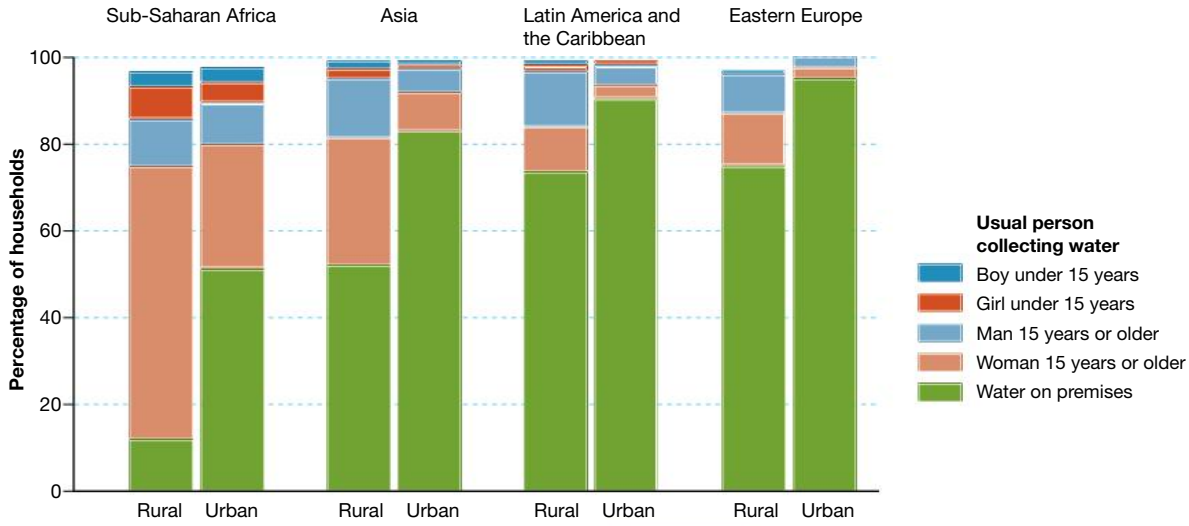
The proportion of the world's population with access to improved drinking water sources increased from 76 per cent to 91 per cent globally between 1990 and 2015. While the proportion of the population with access to water is above 90 per cent in Latin America and the Caribbean, northern Africa and large parts of Asia, it is only 63 per cent in sub-Saharan Africa. There are also big gaps between urban and rural water access. While an estimated 96 per cent of the world's urban population had access to an improved water supply source, only 81 per cent of rural dwellers did. Source 8.8.1 shows the variation in access between urban and rural areas.

Water: A woman's burden

In many countries, women are responsible for fetching the water for their family, as shown in Source 8.8.2. Water is required for drinking, cooking, washing clothes and personal hygiene. Women often walk many kilometres for water, carry heavy loads, wait for hours and have to pay exorbitant prices. Often the water is contaminated, even deadly. In these instances, they face a terrible choice—certain death without water or possible death from waterborne disease. It has been estimated that women in developing countries spend a combined 200 million hours a day collecting water.



Source 8.8.1 Population with access to drinking water, urban and rural areas, 1990, 2000 and 2011 (million). MDG Report, 2013



Source 8.8.2 Distribution of household by person responsible for water collection, by region and urban/rural areas. United Nations, 2010

Once they are old enough, young girls join the effort. They too spend countless hours fetching this basic necessity of life. The work they do is often dangerous. The sides of a well can collapse, burying the women and girls. There is also the physical burden of the loads carried. Water-filled containers are often carried on the head. This creates physical demands on the body, especially the spine and neck.

Source 8.8.3 Indian women in the state of Telangana, 200 kilometres from Hyderabad carrying water to their village

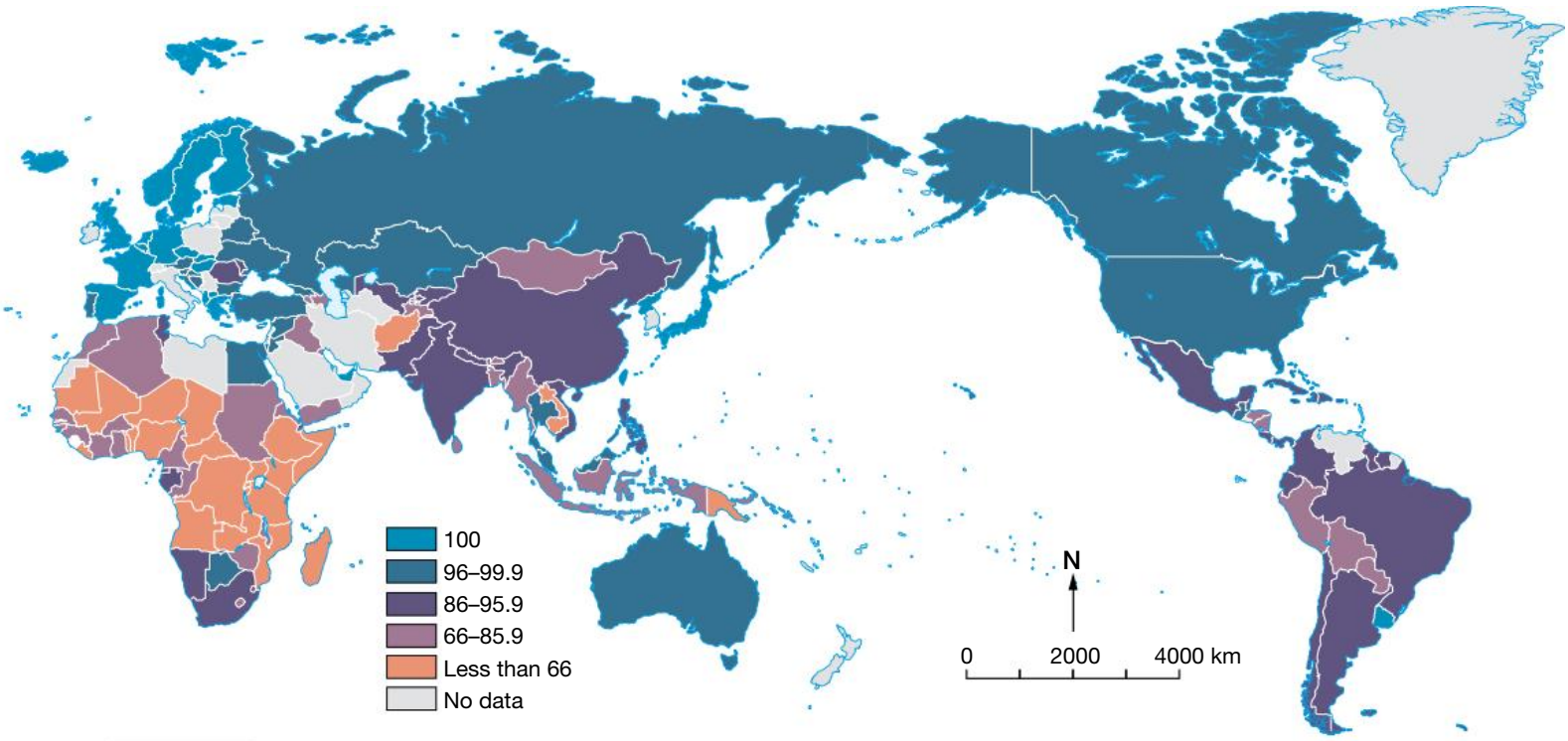
The impacts, however, go beyond physical injury. The dual aspects of the water crisis—lack of water and of sanitation—lock women in a cycle of poverty. They cannot attend school; they cannot earn an income.

Many NGOs focus their efforts on providing a convenient, safe source of water for communities throughout the developing world. The benefits of installing a simple pump are many, but include:

- increased school attendance, level of education and literacy rates, as girls no longer need to miss school to secure water for their families
- improved health for women and girls
- reduced child and maternal mortality from access to safe water and better hygiene during childbirth
- reduced physical injury from carrying water
- reduced risk of rape and sexual assault, and increased safety as women and girls do not have to walk long distances to fetch water
- new opportunities for women's employment as well as greater autonomy and independence.

Access to improved sanitation

Sanitation is a basic need and provides a means of safeguarding people's physical wellbeing. The provision of adequate sanitation in communities prevents the spread of disease. Currently, around one billion of the world's population lack access to adequate sanitation.



Source 8.8.4 Percentage of population with access to adequate sanitation facilities. World Bank, 2010

Source 8.8.4 illustrates worldwide access to adequate sanitation facilities. In 1990, just under half (49 per cent) of the global population had access to improved sanitation. By 2013, this had increased to 64 per cent. The MDG target for 2015 was 75 per cent, but this target was not met. In 2015, 68 per cent of people had access to improved sanitation. From 1990 to 2015, 2.1 billion people gained access to a latrine, flush toilet or other improved sanitation facility (see Source 8.8.4).

Sanitation infrastructure

Lack of sanitation infrastructure forces people to defecate in the open, in rivers or near areas where children play or food is prepared. This increases the risk of disease transmission. The Ganges River in India has 1.1 million litres of raw sewage dumped into it every minute. This is frightening when you consider that just one gram of faeces in untreated water may contain 10 million viruses, one million bacteria, 1000 parasite cysts and 100 worm eggs. Improving sanitation infrastructure can have an immediate impact on public health. It can, for example, reduce diarrhoea death rates by up to a third. In Africa, 115 people die every hour from diseases linked to poor sanitation, poor hygiene and contaminated water.

In addition to improvements to people's health, the provision of sanitation has a number of important social benefits. The provision of sanitation in schools, for instance, encourages children to attend school, particularly girls. The liveability of neighbourhoods improves as the incidence of open defecation declines.

Addressing the issue

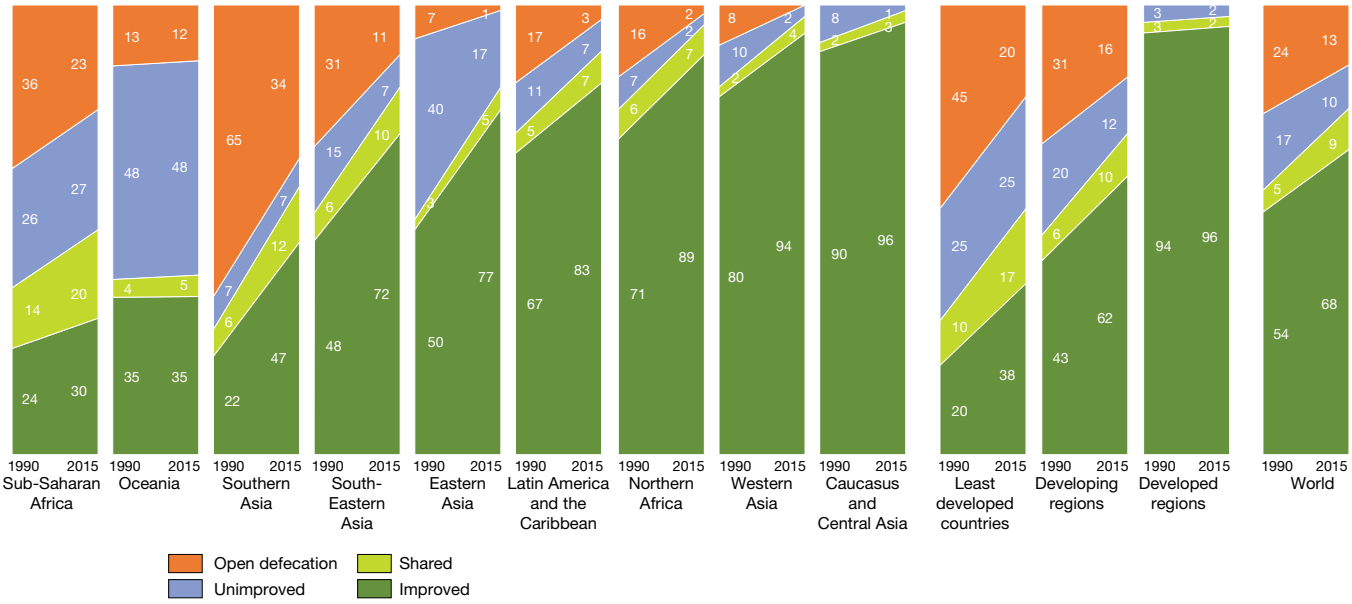
While the proportion of the global population that resort to open defecation declined from 24 per cent in 1990 to 15 per cent in 2011, it remains a problem. In response, authorities now focus on stopping the practice of open defecation through community-level action and influencing social norms to the point where open defecation is no longer considered acceptable. In almost 100 countries around the world, new approaches to sanitation have taken root and the number of declared 'open-defecation-free villages' is rising.

This is only part of the challenge. Providing the necessary infrastructure (toilets, storage facilities, pumping stations, sewerage and water pipelines and treatment works) is a major undertaking. It is expensive and, with rapid rates of urbanisation, it is often difficult for many urban authorities to keep pace with population growth. However, not all solutions need be expensive or high-tech. The construction of communal toilet facilities is a low-cost response to the lack of sewerage infrastructure.

THE POUR-FLUSH TOILET

The pour-flush toilet is a relatively low-cost sanitation solution. It has a water seal that avoids the problems associated with odour and insects. Excreta deposited in the latrine is flushed by pouring 2–3 litres of water into the pan. The mixture is directed into a pit, where the biodegradation of organic wastes occurs. The water used in the flushing process percolates through the soil surrounding the pit.

Source 8.8.5 Proportion of population by sanitation practices, 1990 and 2015 (per cent). United Nations, *Millennium Development Goals Report*, 2015



Sludge has to be regularly emptied from the pit. The use of two adjoining pits alternately enables the sludge in a full pit to undergo further decomposition while the other pit is being used. It also facilitates the manual emptying of sludge after further decomposition.

As with pit latrines and composting toilets, grey water (waste water from the kitchen, laundry and bathroom but not the toilet) has to be treated separately. This is often done by the construction of a seepage pit or trench. Whilst pour-flush toilets are most suitable where there is enough water available for flushing and the ground is permeable, they are not a suitable solution to the sanitation needs of the urban poor when the groundwater table is close to the surface. This is due to the high risk of groundwater pollution.

ACTIVITIES

Remembering and understanding

1 Outline the extent to which access to improved water sources has increased since 1990.
2 Explain what constitutes an 'improved water source'.
3 Outline the health implications of carrying large amounts of water over long distances.
4 Describe the benefits of providing communities with safe, convenient sources of clean water.
5 Outline the consequences of people not having access to adequate sanitation facilities.
6 Describe the impacts of untreated sewage on waterways such as the Ganges River.
7 Explain why the provision of sanitation is considered to be so important to people's wellbeing.
8 Outline the strategies being used to meet the sanitation needs of people. What are the benefits of these strategies?

Applying and analysing

9 Study Source 8.8.1. Using data from the graph, write a series of paragraphs outlining the variations in access to drinking water experienced by those living in rural and urban areas.
10 Study Source 8.8.4. With the aid of an atlas, identify the regions of the world that experience the lowest levels of access to sanitation.
11 Study Source 8.8.5. Using data from the graph, write a paragraph outlining the advances made in the provision of sanitation between 1990 and 2015.

Evaluating and creating

12 Create an education campaign for people in areas where open defecation is common, aimed at highlighting the public health risks of this practice.

UNIT 8.9

Access to shelter

Urbanisation

For the millions of poor in developing countries, the move to urban areas has always been seen as a means of improving their standard of living; that is, getting better jobs and earning higher incomes. This motivation, when combined with their experience of deteriorating conditions in rural areas, has generated a flow of migrants to cities, particularly in the last three decades.

Big shift

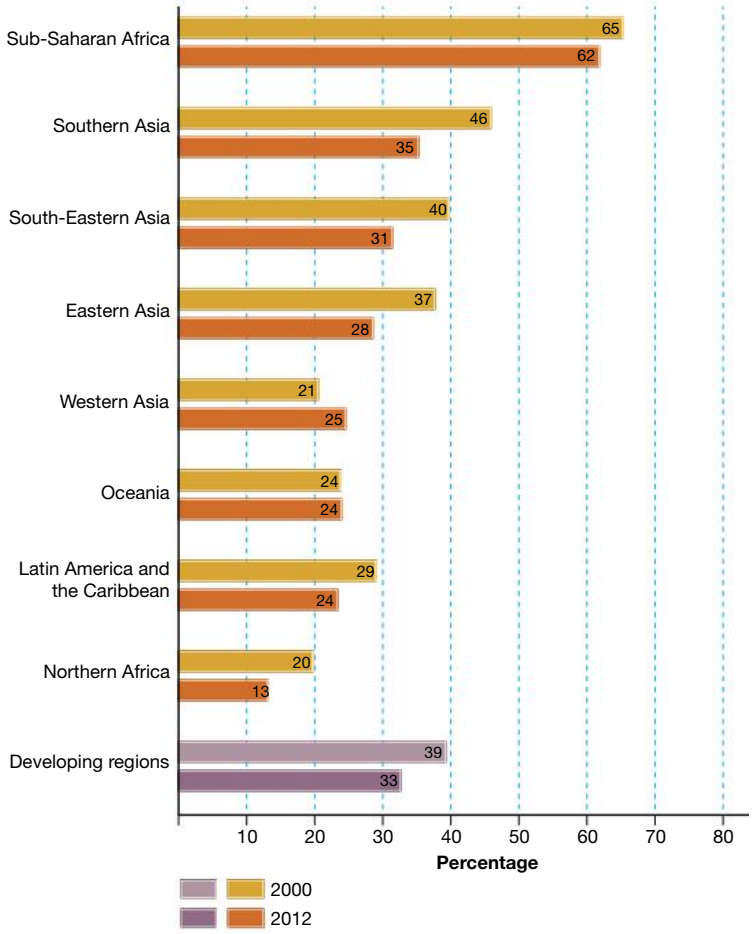
Throughout the developing world, the numbers of people moving from rural areas into large cities have overwhelmed authorities. They have found it impossible to meet the demand for housing and even the most basic urban infrastructure, such as water and power supplies, sanitation and public transport, not to mention medical services and schools. Many people moving to these urban areas are poor and unable to find accommodation. They are forced to find shelter in squatter settlements or slums. Squatter settlements are informal, often illegal, settlements, built by poor people using material scavenged from the streets. A slum is a rundown established neighbourhood in which most people live in a state of poverty.

Worldwide, approximately one-third of the developing world's urban population, or about 940 million people, live in squatter settlements and slums. As is shown in Source 8.9.1, the proportion of the urban population living in slums is greatest in sub-Saharan Africa. Western Asia is the only region in which the proportion of the population living in slums has increased since 2000.

SQUATTER SETTLEMENTS

With few resources or skills, many of the new arrivals are unable to find space in the slums of the megacities. Their only option is to build their own simple housing on vacant land, using materials scavenged from the streets. Because of their 'non-legal' status, squatter settlements have few services and little infrastructure.

The plight of these people is often ignored by government agencies, many of which view the 'invasion' of urban areas by 'the masses' and the development of squatter settlements as a social evil to be eliminated. Bulldozing of these settlements is common.



Source 8.9.1 Proportion of urban population living in slums, 2000 and 2012. United Nations, Millennium Development Goals, 2012

SLUMS

Slums are areas of congested, substandard housing characterised by poverty, squalor, and urban and social decay. They differ from squatter settlements only in terms of land tenure. Typically, slum owners have title to the land on which the slums are located.

Slums develop for a variety of reasons. These include rapid rural-to-urban migration, economic stagnation and depression, high unemployment, poverty, poor planning, politics, natural disasters and social conflict. Generally, however, the poor concentrate in those areas of the city where rents are lowest, resulting in spatial concentrations of the poor and marginalised.

Africa's rapidly growing cities

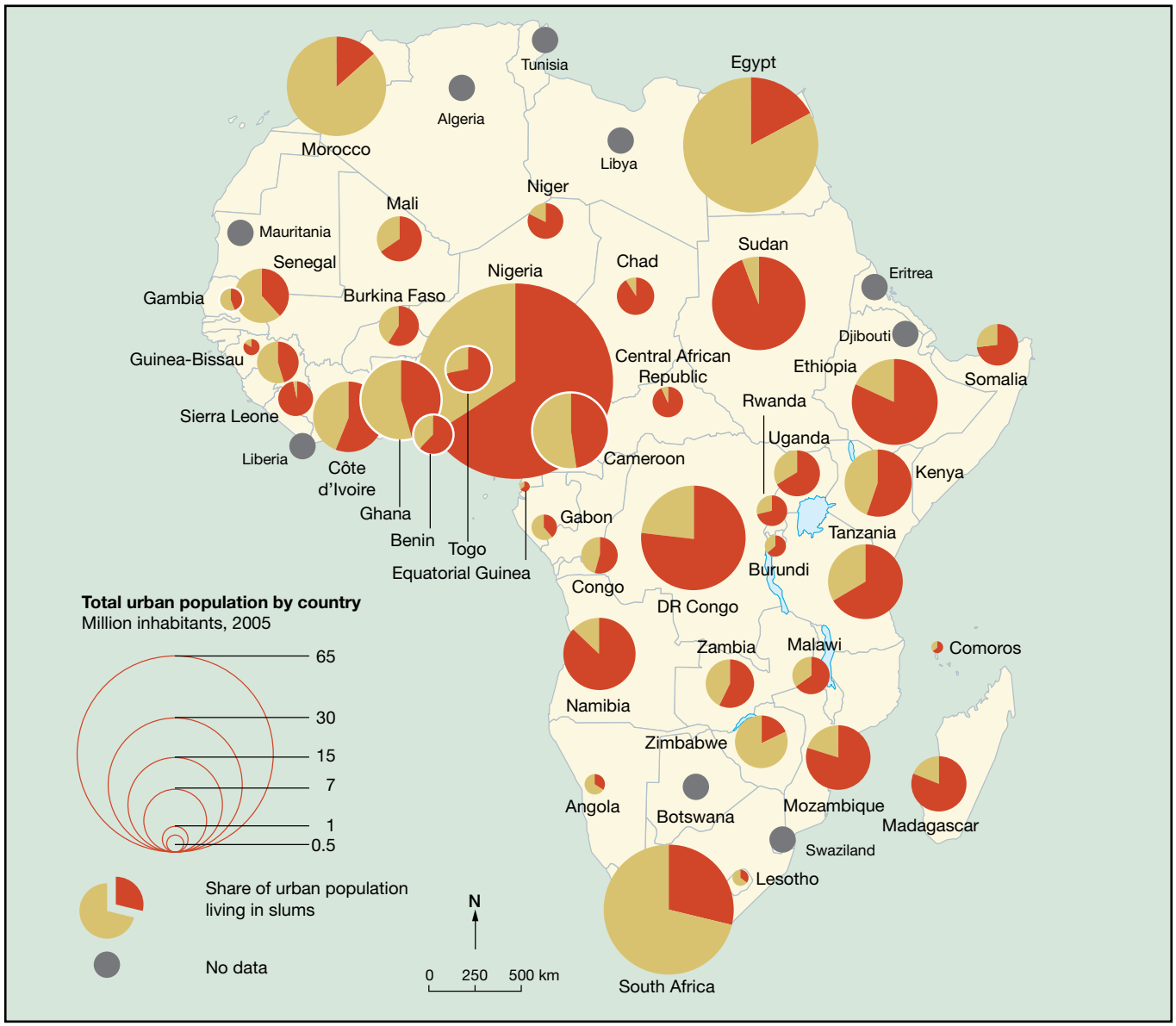
Africa has joined India and China as the third region of the world to reach a population of one billion people—a number that is expected to double by 2050. By then, there will be three times as many people living in Africa's cities. The continent that had fewer than 500 000 urban dwellers in 1950 may have 1.3 billion, or 260 per cent of its population, 100 years later.

Cairo is now Africa's largest urban area, with 11 million people, but by 2015 it will have been overtaken by Lagos in Nigeria, with around 12.4 million inhabitants. By 2020, Kinshasa in the Democratic Republic of the Congo is expected to be the continent's second-largest city. Many of the new dwellers will crowd into slums. Others will simply build their own rough shelters on any unoccupied land.

Mapping slums

Kibera and Mathare are the oldest and largest slums in Nairobi, Kenya. They comprise 13 villages and are home to nearly 200 000 people. In 2012, a group of activist cartographers and local community members got together to map the area, using handheld Global Positioning System (GPS) devices. The slum has no addresses or street names, no open or communal

Source 8.9.2 Africa's slum populations. Note that this map does not include separate data for Sudan and South Sudan, as the data was generated before partition. UNDESA, *The World Urbanisation Prospects, The 2009 Revision*, 2010



Source 8.9.3 Kibera slums, Nairobi, Kenya

spaces, and the sewers are open. The group mapped the location of buildings and narrow lanes, but they also mapped informal schools, storefront churches, daycare centres, dark corners with no streetlights, illegal dumping grounds and broken manholes. With the aid of the map, the community was able to lobby local authorities to install street lights in the more dangerous areas.

The slum mapping movement began in India and has spread around the world. Maps enable slum communities to:

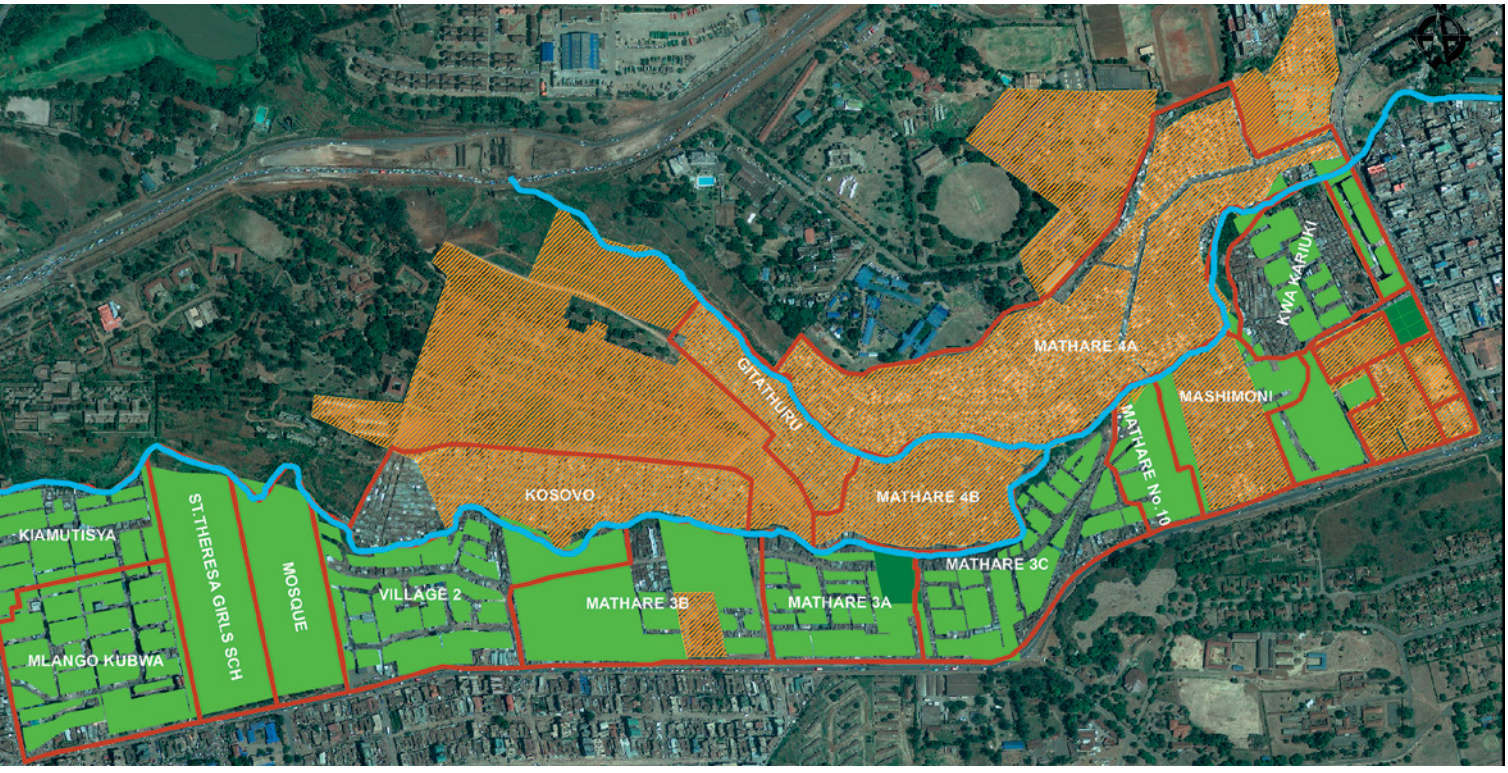
- bring the most urgent problems to the attention of the authorities
- be presented as evidence when dealing with authorities
- record their habitation of an area
- show that a slum is not an empty space and is inhabited.

NGOs can also use the maps to raise awareness of the needs of communities.

Tackling substandard shelter

A range of strategies is used to address the issue of squatter settlements and the development of slums. These include a combination of slum removal, slum improvement initiatives, urban infrastructure upgrades and public housing construction.

Source 8.9.4 The Mathare Valley, shown here in an aerial map. Residents have used handheld GPS devices to map the area.



In the case of squatter settlements, the most effective approaches involve giving people legal title to the land on which they have built their simple shelters. With the security this provides, people are more willing to invest whatever money they might have in improving their housing. Authorities can also improve the health and wellbeing of the squatters by proving basic infrastructure: clean water, communal sanitation facilities, electricity, schools and health clinics. NGOs play an important role in addressing the needs of these communities.

Homelessness

Homelessness, which exists in more, less and least developed countries, is an example of the inequalities in human wellbeing that exist within and between countries. Without access to shelter, the homeless are forced to 'sleep rough' on pavements, in parks and under bridges and freeway overpasses. There are many causes of homelessness. Some of the most common are poverty, lack of affordable housing, mental illness, substance abuse, domestic violence, natural disasters, evictions and foreclosures. Worldwide, there are an estimated 100 million homeless people.

In Australia, one in every 200 people is homeless; that is, without safe, secure or affordable housing. In 2008, 105 000 Australians experienced homelessness. Fifty-six per cent were males, 44 per cent females. Twenty-five per cent were Aboriginal and Torres Strait Islander peoples. Twenty-three per cent of Australia's homeless were children and one in four people was under 18 years of age. Fourteen per cent were over the age of 55 years.

Of those who are homeless, 44 per cent are staying temporarily with relatives and friends, 20 per cent live in boarding houses, 18 per cent are sleeping rough on the streets and 18 per cent stay in accommodation provided by the homeless support system.

ACTIVITIES

Remembering and understanding

1 Outline the impacts of lack of shelter on the wellbeing of people.
2 Explain the process of urbanisation. Why does it lead to the growth of slum and squatter settlements?
3 Explain the difference between a slum and a squatter settlement.
4 Outline the response of authorities to the growth of squatter settlements.

Applying and analysing

5 Study Source 8.9.3. As a class, brainstorm the conditions and problems facing people living in such conditions.
6 As a class, discuss why giving people legal title to the land on which they have built their homes often results in the improvement of their quality of life.
7 Drawing on your discussion in Activity 6, write an account of what it would be like to spend a week in a squatter settlement.
8 Study Source 8.9.1. Identify the region that experienced the greatest reduction in the proportion of its urban population living in slums between 2000 and 2012. In which region did the proportion of the population living in slums increase?
9 Study Source 8.9.2. Which country has the largest urban population? Which country has the highest proportion of its urban population living in slums? Estimate the size of South Africa's urban population.
10 Access the Habitat for Humanity website. Outline the role of the NGO and give at least one example of how it seeks to improve the conditions in which people are forced to live in developing countries.

Evaluating and creating

11 Look up the definition of a megacity. Use the internet to investigate the issue of access to shelter in a megacity. Present your findings to the class in a multimedia presentation. Include in your presentation the following:
- a map of the slum area
- population statistics: past, current and future of the city and slum
- information about where slum-dwellers come from
- reasons for people's move to the city and identify the reason as a SHEEP (social, historical, economic, environmental or political) factor
- discussion of the major issues in the slum.

Select one of the major issues facing the slum-dwellers and evaluate efforts to improve this issue.

UNIT 8.10

Child exploitation

Source 8.10.1 Children at work in a charcoal factory in the Philippines

Child labour

UNICEF estimates that 150 million children aged 5–14 years are engaged in child labour; that is, one in six children in the world. Many are working in hazardous situations or conditions (see Source 8.10.1). Some children work in deep underground mines, while others work in factories, handling toxic chemicals and pesticides or using dangerous machinery. They also work as domestic servants and plantation labour. Some are forced into child prostitution.

The problem is worst in sub-Saharan Africa, where it is estimated that about one in three (or 70 million) children is engaged in child labour. In South Asia, another 44 million children are working. India has the highest number of child workers of any single country—an estimated 29 million children between the ages of 5 and 14.

Those living in the poorest households and in rural areas are most likely to be engaged as child labourers. Those burdened with household chores are overwhelmingly girls. Millions of girls who work as domestic servants are especially vulnerable to exploitation and abuse. Labour often interferes with children's education.

Child trafficking

The trafficking of children—often by illegal means—involves the recruitment, abduction, transportation or receipt of children for the purpose of exploitation. Exploitation includes forcing children into prostitution, forced labour and begging, and using them for the harvesting of internal organs. It may also include illegal international adoption, trafficking for early marriage and the recruitment of child soldiers. Child trafficking is a crime under international law and under the national legislation of many countries.

Child marriage

Despite many countries restricting marriage to those above a minimum age of 16 to 18, traditional (underage) marriages are still widespread. Poverty,

tradition and conflict make child marriage relatively common in sub-Saharan Africa, South Asia and the Middle East. In many tribal systems, a man must pay the girl's family in order to marry her. In many parts of Africa, this payment, which is made in cash, cattle, or other valuables, is less for older girls. Even before puberty, it is common for a married girl to leave her parents to be with her husband.

Many early marriages are linked to poverty, as the girl's parents often need the money raised to feed, clothe, educate and provide shelter for the rest of the family. In parts of Ethiopia and Nigeria, over 50 per cent of girls are married before the age of 15 and some are married as young as the age of seven. In parts of Mali, 39 per cent of girls are married before the age of 15. In Niger, over 70 per cent of girls are married before the age of 18 (see Source 8.10.2).

Sexual exploitation

Prostitution of children under the age of 18 years, child pornography and the (often related) sale and trafficking of children are widely seen as crimes of violence against children. They are a form of economic exploitation, just like forced labour or slavery. The children exploited in this way often suffer damage to their physical and mental health. They are especially vulnerable to sexually transmitted diseases, including HIV/AIDS. Under Australian law, any Australian found guilty of involvement in child sex tourism faces up to 17 years in jail.

Child soldiers

Thousands of children serve as soldiers in armed conflicts around the world. Boys and girls, some as young as eight years old, serve in government forces and armed opposition groups. They carry out a variety of roles. They may fight on the front lines, participate in suicide missions, and act as spies, messengers or lookouts. Once recruited, children undergo varying degrees of indoctrination. Often this process is very brutal. Girls may be forced into sexual slavery. Many are abducted or recruited by force, while others join out of desperation, believing that armed groups offer their best chance for survival.

Children are still involved in armed conflict in a number of countries. These include the Central African Republic, the Democratic Republic of the Congo, Mali, Pakistan, Somalia, Sudan, Syria and Yemen among others.

Source 8.10.2 Child marriage (under 18 years): 20 highest-prevalence countries in the world (percentage of all marriages). Girls Not Brides, 2013

Country	Percentage of all marriages
Niger	75
Central African Republic	68
Chad	68
Bangladesh	65
Guinea	63
Mali	55
South Sudan	52
Burkina Faso	52
Malawi	50
Madagascar	48
Mozambique	48
India	47
Eritrea	47
Somalia	45
Sierra Leone	44
Zambia	42
Nepal	41
Dominican Republic	41
Ethiopia	41
Nicaragua	41

Source 8.10.3 A child soldier at the Cambodian refugee camp of Nong Samet on the Thai–Cambodian border

Slavery

Worldwide, nearly 30 million people, many of them children, are enslaved. They are trafficked to work in the sex industry or as forced labour, and they are sometimes victims of **debt bondage** or even born into servitude. There is still evidence of hereditary slavery, particularly in parts of West Africa and South Asia. According to the Global Slavery Survey of 2013, slavery still exists in 162 countries and almost 21 million people are victims of forced labour (see Source 8.10.4).

Slavery is the possession or control of people to deny freedom and exploit them for profit or sex, usually through violence, coercion or deception. The definition includes indentured servitude, forced marriage and the abduction of children to serve in wars (child soldiers).

Ten countries account for three-quarters of the world's slaves. In India, where slavery ranges from bonded labour in quarries and kilns to commercial sex exploitation, 13.9 million people are enslaved. After India is China, with 2.9 million, followed by Pakistan (2.1 million), Nigeria (701 000), Ethiopia (651 000), Russia (516 000), Thailand (473 000), Democratic Republic of the Congo (462 000), Myanmar (384 000) and Bangladesh (343 000).

Often the victims of enforced labour are captured or kidnapped before being sold or kept for exploitation, whether through 'marriage', as unpaid labour on fishing boats, or as domestic workers. Others are tricked and lured into situations they cannot escape, with false promises of a good job or an education.

Ending child marriage

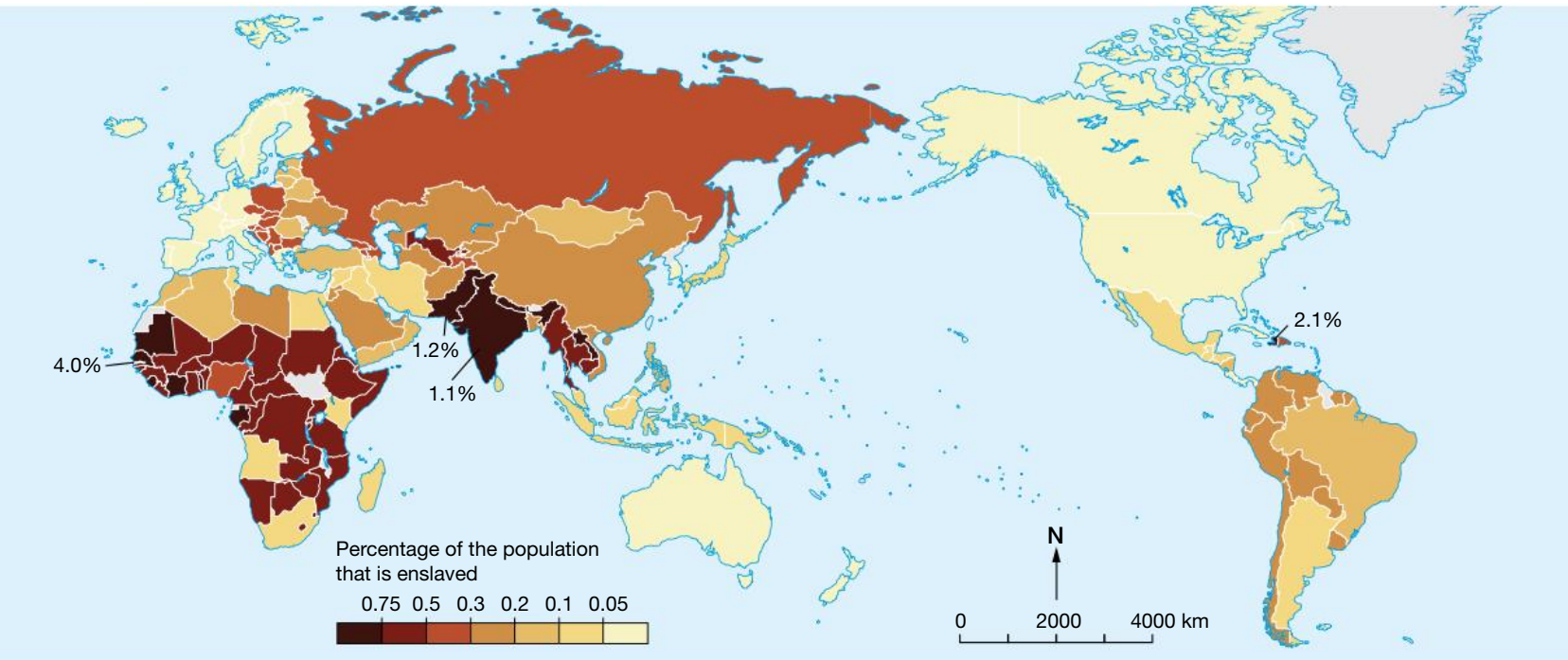
Every year it is estimated that 14 million girls are married before they turn 18. Globally, about 400 million women aged between the ages of 20 and 49 were married before the age of 18.

UNICEF and NGOs such as Girls Not Brides are working together to eliminate child marriage, by:

- providing information, skills and support networks for married girls or girls at-risk for early marriage
- educating parents, religious/traditional leaders and community members
- improving the accessibility and quality of schooling for girls
- providing economic support and incentives for girls and their families
- fostering and enabling legal and policy frameworks.

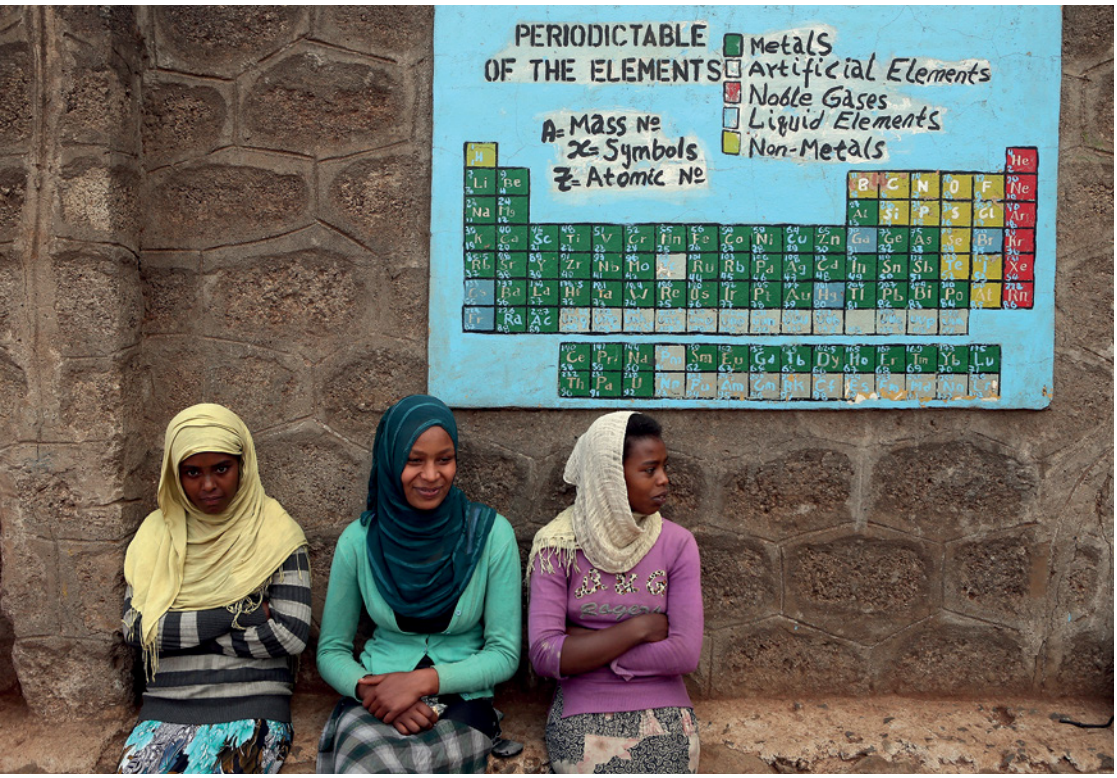
Ban Ki-Moon, Secretary General of the United Nations, said that 'education for girls is one of the best strategies for protecting girls against child marriage.' Expanding access to primary and secondary education can delay, and even prevent, early marriage. According

Source 8.10.4 Percentage of the world's population that is enslaved. Global Slavery Index, 2014



to a study conducted by the International Center for Research on Women, girls with 0–3 years of education were six times more likely to marry before adulthood than girls who had received a secondary education. Many child brides are forced to leave school early.

In Addis Adaba, Ethiopia, it is estimated that three-quarters of streetwalkers are escapees from the countryside, fleeing early marriage. One local NGO, Godanaw Rehabilitation Integrated Project, is providing skills training and healthcare to thousands of female streetwalkers. At AGOHELMA, one of the oldest orphanages in Ethiopia, one of their main aims is to educate women and enhance their economic power.



Source 8.10.5 Female secondary school students sit under a poster showing the periodic table of the elements in the courtyard at an AGO school (founded by Abebech Gobena in 2013) in Addis Ababa, Ethiopia.

ACTIVITIES

Remembering and understanding

1. Outline the types of child exploitation in developing countries.
2. State how extensive child labour is in developing countries. Where is it most commonly practised?
3. Explain what child trafficking is. List the reasons why children are traded.
4. Explain the link between poverty and child marriage.
5. Define slavery.

Applying and analysing

6. As a class, discuss the issue of child exploitation. Summarise the key points raised in the discussion in the form of a mind map.
7. Study Source 8.10.5. With the aid of an atlas, identify the parts of the world with the highest percentage of the population enslaved.

Evaluating and creating

8. Debate the following topic: 'For many people living in developing countries, putting their children to work is a necessity and should not be viewed as exploitation'.
9. Use the internet to investigate the issue of child labour or child trafficking. Develop a short multimedia presentation to educate the public about the extent of the problem. Give at least one example of child labour and the steps that NGOs such as UNICEF are taking to address the problem.

Inquiry tasks

Millennium Development Goals

Investigate the United Nation's Millennium Development Goals.

1 What are the goals for the provision of clean water and sanitation?

2 Is progress being made in meeting these goals?

3 What other issues are being addresses by this initiative?

Present your findings as a report.

Investigate alternative approaches to the provision of sanitation in cities in developing countries, especially approaches sponsored by NGOs and international bodies such as the World Bank.

Or

Investigate the contribution of NGOs to the UN's Millennium Development Goals initiative. Give specific examples of the projects sponsored by NGOs. Evaluate the success of such initiatives.

Inequality Post-it posters

Using the information in units 8.5 and 8.6, work in pairs to brainstorm a list of reasons why some countries are less developed than others. Write your ideas on Post-it notes—one idea per note.

Group similar ideas under suitable headings on the poster as patterns emerge and place the Post-it notes on a blank poster.

A survey of development

The Human Development Index (HDI) is a common method of measuring human wellbeing and development, because it takes more than just financial and economic data into account. Sourced from three dimensions of human development, the HDI takes into account:

- life expectancy and health
- levels of knowledge and education
- standards of living.

Country	Human Development Index value	Population	Life expectancy at birth	Expected years of schooling	Gross National Income (per capita)	HDI level (very high, high, medium, low, no data)
Norway						
Australia						
Lebanon						
Brazil						
China						
Indonesia						
Bolivia						
Vietnam						
Myanmar						
Sierra Leone						
Somalia						
Democratic People's Republic of Korea (North Korea)						

Your task is to access current data on the HDI from the UNDP or WHO website. A table such as the one opposite could be used to collate information.

Using the data you collect, hypothesise about the factors that may have contributed to the different results, for example, social, historic, economic, environmental, political, technological and cultural.

Where does our aid go?

In pairs or small groups, explore the various forms of aid provided by the Australian Government to foreign nations. Write a report determining the main beneficiaries of the aid (PNG, Indonesia etc.), the types of aid supplied (financial, military, education etc.) and the reasons behind the decisions to donate specific the aid.

Your report should:

- determine whether such aid is long term, medium term or short term
- provide concrete examples of this form of aid
- determine which of the following factors are behind the Australian Government's decision-making process: social, historical, economic, environmental or political.

The following websites provide statistical information:

- World Vision Australia
- AusAID Annual Reports.

GLOSSARY

cash crops crops grown for sale rather than consumption

child labour the employment of children, especially when illegal and exploitative

colonialism the practice of acquiring full or partial political control over another country, occupying it and exploiting it economically

debt bondage when a person is forced to pay off a loan with labour in place of currency, over an agreed or indeterminate period of time

developed country a rich, industrialised country of the world

developing country a poor or middle-income country often dependent on subsistence farming.

development a process of change that improves the quality of life of a community.

economic growth the growth in the productive capacity of the economy (and national income)

fertility rate the average number of children born to a woman

formal economy the part of an economy subject to government regulation and taxation. It is included in gross national product

fuelwood any wood collected and used as fuel

Industrial Revolution a period of major industrialisation in Britain and the rest of Europe during the late 1700s and early 1800s

infant mortality rate the number of infants per 1000 live births who die between birth and their first birthday

improved sanitation facility a sanitation system that ensures human excreta does not come into contact with humans

life expectancy the average period that a person may expect to live

maternal mortality the death of a woman while pregnant, during childbirth, or in the days after giving birth or having pregnancy terminated

middle class the social group positioned between the upper and working classes. It includes professional and business people and their families

sanitation the infrastructure related to the collection and disposal of human waste

social infrastructure the basic facilities necessary for human development; includes health (hospitals), education (schools) and housing

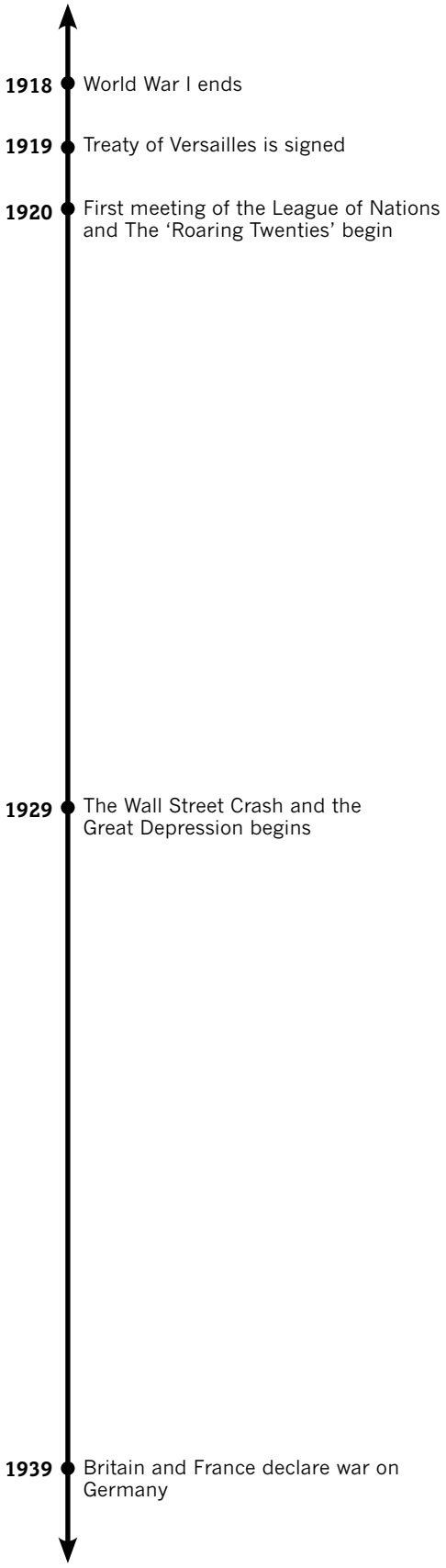
subsistence production production at a level sufficient for a person's own use or consumption, without any surplus for trade

CHAPTER 9

The modern world and Australia: Overview

The end to World War I brought the challenge of mending the political conflicts that led to the war; it also brought new challenges that arose as a result of the war. The Treaty of Versailles and an international body called the League of Nations were designed to help manage global conflicts. However, neither succeeded in controlling the tension between growing extremist **ideologies**.

As the economies of Australia and Europe appeared to have started to recover from the war and the US economy flourished, the Roaring Twenties moved into full swing. However, with the collapse of the US stock market in the Wall Street Crash, the Great Depression set in, setting the scene for social unrest and political conflict once more.



Source 9.0.1 The Sydney Harbour Bridge during construction, 1930

Source 9.0.2 Timeline of the modern world during the interwar years

UNIT 9.1

The interwar years

Between the wars

World War I ended on 11 November 1918, with the signing of an armistice between Germany and its enemies, Britain, France and the United States. Four years of bitter fighting had seen a total of almost 10 million soldiers killed and another 21 million wounded. The challenge facing the victors was how to make sure that such a catastrophe could never happen again.

The search for peace

The Paris Peace Conference

Leaders of the three largest victorious nations, France, Britain and the United States, met in Paris on 18 January 1919 to decide the fate of defeated Germany. Nicknamed the 'Big Three', Georges Clemenceau of France, David Lloyd George of Britain and Woodrow Wilson of the United States each had different ideas about how peace should be achieved and what ought to happen to Germany. These differences led to many heated exchanges, but in the end Clemenceau won the day. This was mainly because the public mood in Paris during the Peace Conference was one of vengeance against Germany. The French had endured four years of German occupation and had suffered the highest proportion of deaths of any nation that had fought in World War I.

The Treaty of Versailles

On 28 June 1919, the representatives of the German Government reluctantly signed the Treaty of Versailles. The victors, despite Germany's protests, forced the treaty upon them. In Germany, public reaction to the treaty was one of anger and bewilderment. The Treaty of Versailles was a major humiliation for Germans, who argued that nations from both sides had been responsible for starting the war. According to the Treaty of Versailles, Germany was forced to:

- pay $32 billion for the cost of the war in **reparations**
- accept sole guilt for starting the war
- limit its army to only 100 000 soldiers
- hand over all tanks and heavy guns
- ban conscription
- close all of its military academies
- hand over territories to France and newly created nations such as Poland and Czechoslovakia
- hand over all of its overseas colonies.

Source 9.1.1 Aims of the 'Big Three' at the Paris Peace Conference in 1919

	Georges Clemenceau	David Lloyd George	Woodrow Wilson
Nickname	'The Tiger'	'The Welsh Wizard'	'The Schoolmaster of Politics'
Famous quote	'My home policy: I wage war; my foreign policy: I wage war. All the time I wage war.'	'Once blood is shed in a national quarrel, reason and right are swept away by the rage of angry men.'	'Friendship is the only cement that will ever hold the world together.'
Aims at the Paris Peace Conference	Crush Germany so that it could never again invade France. Destroy the German army. Force Germany to pay for the full cost of the war. Prohibit German soldiers from German territory close to the French border.	Restore Germany's economic strength but weaken its military. Rebuild the trade relationship between Britain and Germany. Make sure no one nation dominates Europe.	Create an international council, the League of Nations, to resolve disputes between nations before they resort to war. Give 'self-determination' to people living under foreign rule.

Source 9.1.2 Painting showing the signing of the Treaty of Versailles in the Hall of Mirrors in the Palace of Versailles, 28 June 1919

The League of Nations

The idea for an international forum in which the nations of the world could meet to settle their differences had been one of Woodrow Wilson's 'Fourteen Points' presented at the Paris Peace Conference. While most of his other ideas had been rejected, the victors of World War I agreed to the creation of a League of Nations. By accepting the League of Nations Covenant, member nations committed themselves to:

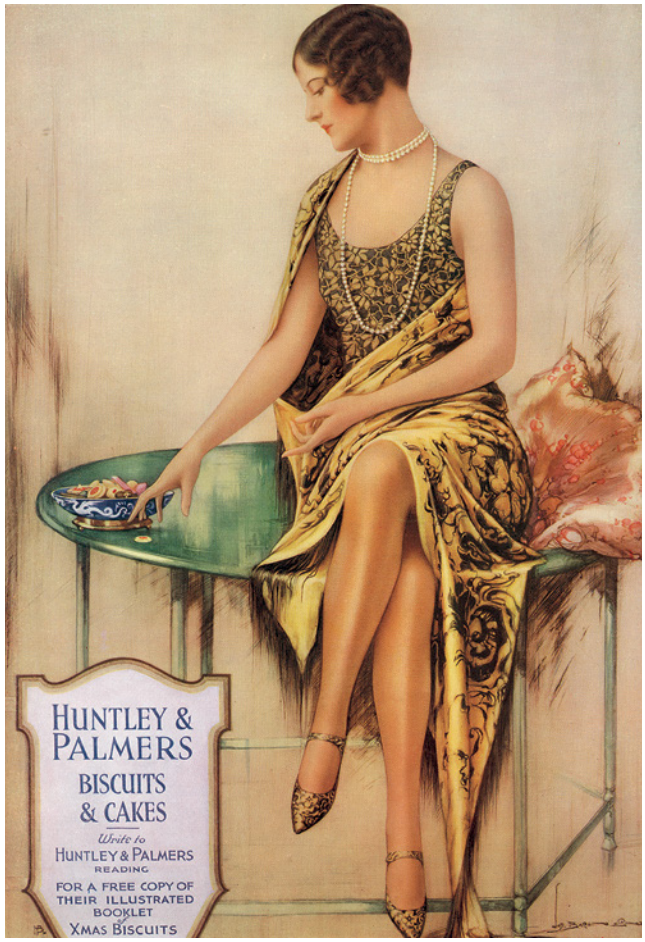
- reducing their weapons
- supporting one another economically
- respecting one another's territory
- bringing their disputes before an international court
- considering an act of war against one as an act of war against all.

Boom and bust

The 'Roaring Twenties'

The decade of the 1920s is often called the 'Roaring Twenties' because it was characterised by fast economic growth and rapid cultural change. After the hardship and horror of the war years, people wanted to forget the past and make the most of peacetime. A mood of optimism as well as more leisure time led to new forms of entertainment such as jazz music and films with sound.

Good economic times also allowed more women to enter the workforce. Having proved that they could do the same jobs as men during the war, and with the right to vote, many young middle-class women displayed a newly found confidence. Fashions became more daring as skirts and hair lengths shortened. Make-up became more obvious and many women flaunted their new sense of independence by smoking in public.



Source 9.1.3 A 1920s advertisement featuring a 'flapper'. Her newly found confidence demonstrated by her clothing shows the changing attitudes of women.

The rise of the United States

During the 1920s, the United States emerged as the world's economic leader, having been the only nation to actually profit from the war. American loans to Europe and Australia saw new industries emerge, businesses flourish and unemployment fall. This economic prosperity also allowed governments to build new infrastructure such as highways, railways, power stations and new suburbs. Cars, radio sets and other electrical goods, such as refrigerators and washing machines, became more readily available due to mass production. Attracted by new opportunities in the cities, many people moved from rural areas.

The Wall Street Crash

The optimism of the 1920s was brought to a sudden halt on 24 October 1929. On 'Black Thursday', shares listed on the New York Stock Exchange (also known as Wall Street) drastically fell and continued to do so for several weeks. 'Black Thursday' was followed by 'Black Monday' and then 'Black Tuesday'. The Wall Street Crash started the Great Depression. Shares are a way for investors to buy part ownership of a public company and a way for companies to raise funds to expand. The crash in share prices saw thousands of investors lose their life savings almost overnight. The market continued to fall for the next few months, in which time banks collapsed, companies closed and unemployment climbed.

Did you know?

Germany made its final reparations payment required by the Treaty of Versailles on 3 October 2010. This was for $94 million.

BROOKLYN DAILY EAGLE

And Complete Long Island News

LATE NEWS

WALL ST. IN PANIC AS STOCKS CRASH

Attempt Made to Kill Italy's Crown Prince

ASSASSIN CAUGHT IN BRUSSELS MOB; PRINCE UNHURT

Hollywood Fire Destroys Films Worth Millions

FEAR 52 PERISHED IN LAKE MICHIGAN FERRY IS MISSING

PIECE OF PLANE LIKE DITEMAN'S IS FOUND AT SEA

High Duty Group Gave $700,000 to Coolidge Drive

STOCKS CRASH IN RUSH TO SELL; BILLIONS LOST

ATTEMPT MADE ON LIFE

CARNEGIE CHARGE OF PAID ATHLETES ROUSES COLLEGES

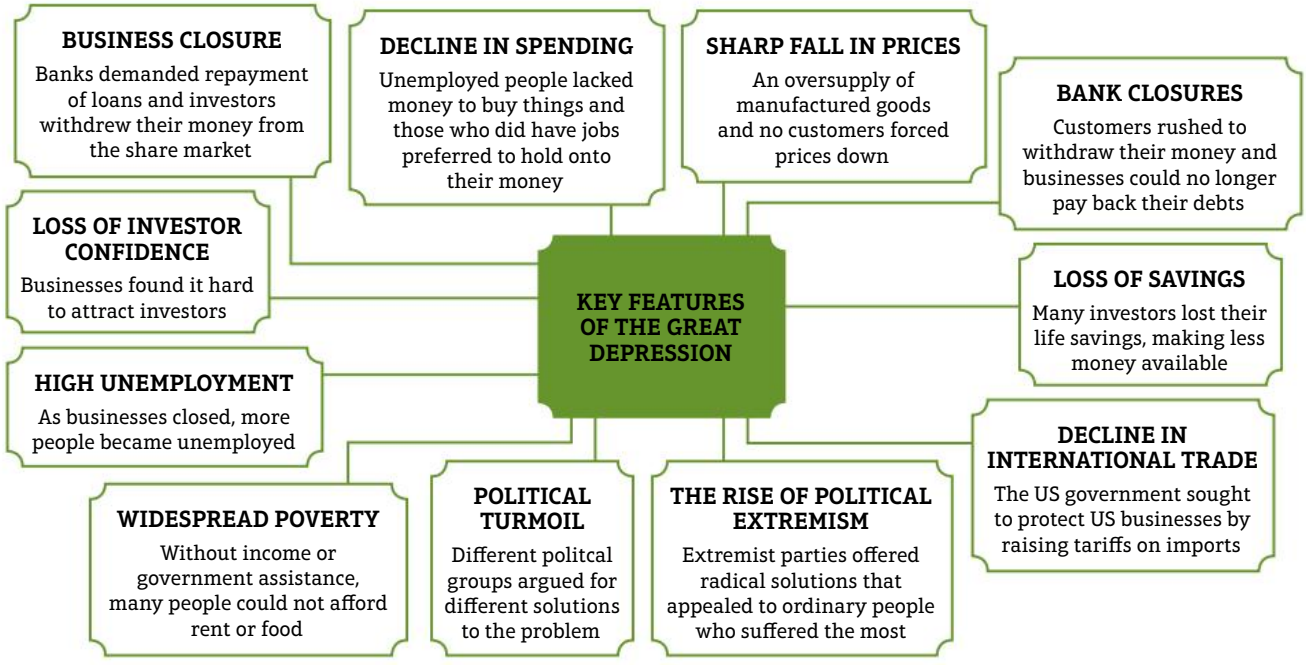
HOOVER'S TRAIN HALTED BY AUTO PLACED ON RAILS

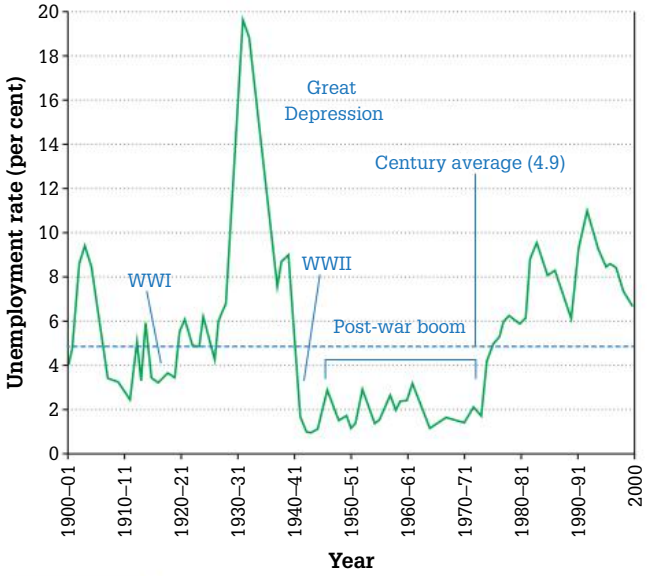
WARDER SOUGHT TO KEEP SEA TRIP SECRET, AID SAYS

SOMERS NAMED AS HEAD OF NEW EXCHANGE BANK

Source 9.1.4 US newspaper headline on 24 October 1929, otherwise known as 'Black Thursday'

Source 9.1.5 Key features of the Great Depression





Source 9.1.6 Unemployment rates in Australia, 1901–2000, showing the significance of the Great Depression

Source 9.1.7 A makeshift dwelling in one of Sydney's shantytowns, known as 'happy valleys', during the 1930s. Here, thousands of families made homeless by unemployment struggled to survive.

While the Wall Street Crash of 1929 was the immediate cause of the Great Depression that lasted for the next decade, other longer-term causes included:

- an oversupply of manufactured goods that could not be sold
- low incomes for ordinary people, making it difficult for them to buy everyday items
- many investors hoping to make money on the stock market were in debt
- the trade policies of the US Government which discouraged foreign trade.

The Great Depression

Known as the Great Depression due to its length and severity, the decade of the 1930s ended the peacefulness and optimism of the 1920s and plunged the world into poverty, turmoil and new fears of war. Unemployment, homelessness, starvation, crime and civil unrest increased in all countries affected by the Great Depression. Australia was one of the countries hit by the Great Depression, due to the economy's dependence on primary exports and loans from the United States.

In this context, extremist political parties became more popular, especially in Germany, where people voted in greater numbers for the Communists and the **Nazis**. Germany had come to rely heavily on US loans, which were no longer available. It also suffered badly because of repaying the reparations demanded by the Treaty of Versailles.

ACTIVITIES

Remembering and understanding

1 Why did Germans feel humiliated by the Treaty of Versailles?
2 What was the main aim of the League of Nations?
3 Outline the key features of the 'Roaring Twenties'.
4 Refer to Source 9.1.5. Group each of the key features of the Great Depression into social, political or economic effects.

Applying and analysing

5 Account for the different aims of the 'Big Three' at the Paris Peace Conference.
6 Evaluate the different ways international leaders tried to make the world more peaceful after World War I.

Evaluating and creating

7 Create a flow chart showing how the Wall Street Crash of 1929 triggered the Great Depression.
8 Conduct your own research into what happened to the League of Nations in the 1930s. Start by developing a research question about whether or not it achieved its aims.

Inquiry tasks

Treaty of Versailles

The conditions of the Treaty of Versailles are considered one of the causes of World War II. The Paris Peace Conference, at which the treaty was negotiated, included representatives from 27 nations. However, delegates from Germany and several other countries were not permitted to attend.

1 Find out what outcomes the United States, France, Britain, Italy and Germany were hoping for from the 1919 Peace Conference. In your research, consider any existing treaties that nations would have to uphold as part of the Treaty of Versailles and debts nations had accumulated during the war.

2 Evaluate the outcomes each of the five nations would have sought against the actual terms of the Treaty of Versailles.

3 Form groups of five and allocate one of five signatories mentioned above to each person. Each person should conduct further individual research on the recent history of their allocated country and its leader.

4 Reform your groups and recreate the Paris Peace Conference of 1919, allowing a German signatory to attend. During the role-play, you will represent your allocated nation's interests. Try to reach a resolution that satisfies all five attendees.

Source 9.2.1 Unemployed men queue for the chance of work at a dockyard in England, 1931

The Real 1920s

In groups, create a two-part documentary series that investigates the 1920s. Your aim is to show the contradictions and divisions that plagued this seemingly fun and carefree decade. You will need to provide a balanced perspective, showing why there was a darker side to the decade. Include the following aspects to your documentary:

- a script
- a poster advertisement that outlines the key aspects of the documentary, with a suitable image and captions
- a short promotion trailer in a bid to attract viewers to your program
- interviews with key personalities from the time.

Present your finished work to the rest of the class.

The Great Depression

The Great Depression was a result of a combination of different policies and practices in the United States, Europe and Australia. In pairs, examine and research some of the factors leading to the Great Depression. They include:

- US protection laws (raising tariffs on foreign goods)
- speculation on the stock market
- mass production of goods and overproduction of food
- laissez-faire economics, including hire purchase schemes
- loans from the United States and Britain to European countries and Australia
- Australian reliance on primary exports
- printing money in Germany (leading to hyperinflation and devaluation of the German currency).

Imagine it is 1933 and you are co-authors of a report to be submitted to the League of Nations about the causes of the Great Depression. Create your report in digital form. In your report, critique the main factors leading to the depression by:

- outlining the key feature or features of each factor
- discussing the positives of (or reasons for) each factor
- discussing the negatives of each factor and how they contributed to the Great Depression.

GLOSSARY

ideology a system of ideas, especially political or economic, of a large group of people, often with an institution to carry out the attainment of the ideas, for example nationalism and communism

Nazi a member of the extreme nationalist party in Germany led by Adolf Hitler that aimed at abolishing democracy and restoring Germany's status after World War I

reparations repayments for the costs incurred by war

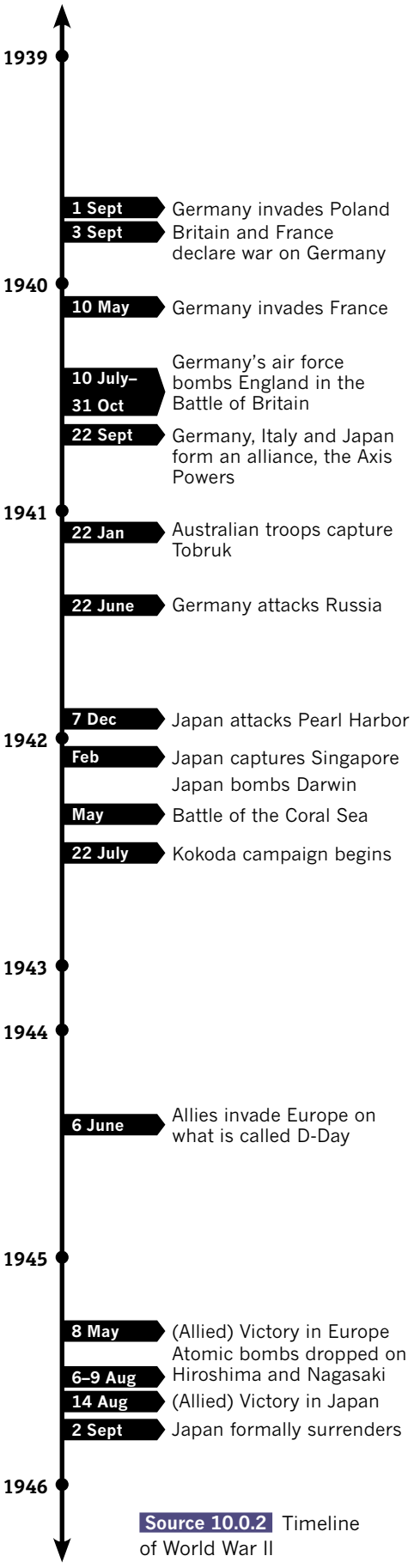

ABBOTT

CHAPTER 10

World War II

Introduction

Twenty-one years after the 'war to end all wars' ended, the impact of the Treaty of Versailles on Germany, the lack of power of the new League of Nations, the aggression of Adolf Hitler and international inaction all contributed to the outbreak of World War II. The war spread across Europe, North Africa, Asia and the Pacific, involving more armed forces and resulting in the deaths both of soldiers and civilians on a much greater scale than ever before.



Source 10.0.2 Timeline of World War II

Source 10.0.1 Harold Abbott painted this soldier looking over his shoulder after Singapore was defeated and surrendered in 1942. Perhaps as many as 20 000 Australians were captured and imprisoned in Changi. Australian War Memorial, 1946

UNIT 10.1

Causes of World War II

Treaty of Versailles

At the end of World War I, the major victorious **Allies** met to impose terms on Germany. The treaty, signed in 1919 at Versailles in France, aimed to punish Germany and limit future German expansion. However, the Allies created new hostility because the treaty laid the blame for World War I completely on Germany and the clauses were harsh and included:

- Germany to pay huge reparations to the Allies for their military expenditure in World War I
- Germany to drastically reduce its defence forces
- territory to be taken away from Germany, including coal reserves (10 per cent), agricultural land (15 per cent), iron reserves (48 per cent) and industry (10 per cent).

The Great Depression

In October 1929, the stock market in the United States collapsed, which triggered a worldwide economic depression. In Germany, the poverty and unemployment caused by the Great Depression, combined with the treaty conditions, were extreme. Germany suffered hyperinflation because the government ordered the Central Bank to print more money; as a consequence the German Mark became worthless. In addition, Germany was still paying huge reparations as a result of their defeat in World War I.

The rise of the Nazi Party

In the 1932 elections, the Nazi Party, led by Adolf Hitler, gained the largest number of popular votes. The party won on a platform that promised to invigorate the German economy and proposals to avoid paying World War I reparations.

The Nazi Party had enough influence to ensure that on 30 January 1933, President Hindenburg appointed Hitler as Chancellor. With the death of Hindenburg in 1934, Hitler combined the roles of Chancellor and President, to become as *Führer* (meaning 'leader').

Hitler's actions

In 1934, Hitler began rebuilding the army, and building new warships and a German air force, the *Luftwaffe*. The air force gained experience and new tactics (***Blitzkreig***) during the Spanish Civil War of 1936. Germany provided support to the Nationalists, a fascist rebel group aiming to overthrow the Spanish Government.

Source 10.1.1 The hyperinflation in Germany in 1923 made the paper money so worthless that children used the notes as building blocks

In 1936, German military forces entered the Rhineland, violating the Treaty of Versailles. In the same year, Hitler signed alliances with the fascist leader in Italy, Benito Mussolini, creating the Rome–Berlin Axis Pact, and with General Tojo Hideki of Japan, creating the Anti-Comintern Pact. In 1937, Germany, Italy and Japan signed the Tripartite Pact, thereby establishing the three **Axis Powers**.

The policy of appeasement

During the mid to late 1930s, the official policy of Britain was appeasement; that is, to avert another war with Germany and to create a barrier against the spread of communism from Russia. Britain and France

Source 10.1.2 The British Prime Minister Neville Chamberlain's meeting with Hitler in September 1938 led to the Munich Agreement.

sought to work with Hitler's demands. In 1938, Hitler occupied Austria, which was re-unified with Germany. When France and Britain asked Hitler to explain his actions, he promised that the *Anschluss* was the end of Germany's expansionism. Six months later the situation reoccurred over Sudetenland—a region of Czechoslovakia (modern-day Czech Republic and Slovakia) where many ethnic Germans lived.

Over the course of three meetings, the British Prime Minister Neville Chamberlain and Hitler settled on the Munich Agreement, which allowed Hitler to seize Sudetenland, provided he did not invade Czechoslovakia. Despite the agreement, Hitler invaded Czechoslovakia in March 1939. In light of Hitler's false promises, Britain and France allied with Poland to deter Hitler from invading Poland. But German troops invaded Poland on 1 September 1939; as a consequence, Britain and France declared war against Germany.

Weakness of the League of Nations

After the end of World War I, the League of Nations had been established to help keep world peace. However, it failed against the aggression of Germany, Italy and Japan.

Japan and Italy

In 1931, the military-led Japanese Government decided to seize resources from other countries as its own resources were limited and the Japanese army invaded Manchuria (north China). The League of Nations condemned Japan, which resulted in Japan resigning from the League of Nations and continuing its conquests. When Italy invaded Abyssinia (modern-day Ethiopia) in 1935 the League of Nations again condemned the attack, but essentially did nothing. In 1937, needing more resources, Japan attacked China, slowly working down the coast towards South-East Asia.

Reasons the League failed

The League of Nations failed partly because not all countries had joined—the most notable example being the United States. Russia and Germany were not even allowed to join at first. By leaving the League, Germany, Italy and Japan could continue their aggressive action. As the League had no armed forces, it relied on nations to step into conflicts on its behalf and nations had neither the money nor the military power to do so. The only real action the League could take against another member was to use a trade **embargo**, but as League members were still allowed to trade with non-member nations this was not particularly effective.

ACTIVITIES

Remembering and understanding

1 What four factors led to World War II?
2 What documents established Germany, Italy and Japan as the Axis Powers?

Applying and analysing

3 How did the Treaty of Versailles affect Germany?
4 How did the Great Depression help Hitler to come to power?

Evaluating and creating

5 Write one supporting argument for and one against the policy of appeasement implemented by Britain and France.
6 Evaluate in a short paragraph the reasons the League of Nations was unable to prevent conflict.

UNIT 10.2

The course of the war in Europe

War begins in Poland

On 1 September 1939, Germany invaded Poland. The German *Blitzkrieg*, (lightning war) style of invasion involved a combination of *Wehrmacht* (land forces) and *Luftwaffe* (air forces) attacks. The *Einsatzgruppen* (German task forces) followed behind the regular land troops. Their prime objective was to eliminate any political or ideological enemies, including Jewish people, in preparation for German colonisation of Poland. German invasion of other territories aimed at providing *Lebensraum* (living space) for the German people.

On 3 September, France and Britain, as well as Australia, declared war on Germany, but failed to send any defensive forces to Poland. Britain's military was weak and needed time to rebuild. France decided on a defensive strategy, believing in the strength of the Maginot Line, a line of fortifications built along France's eastern border. Though Britain sent some troops (the British Expeditionary Force) to France in case of invasion, Britain and France did not carry out any major fighting during this period. For this reason, it is known as the 'Phoney War'.

Soon after the German invasion, the Soviets invaded Poland from the east. Having signed a non-aggression pact in August earlier that year, the two invaders split Poland between them. Following their occupation of Poland, Germany invaded Norway and Denmark, and the Soviet Union invaded Finland.

Fall of France

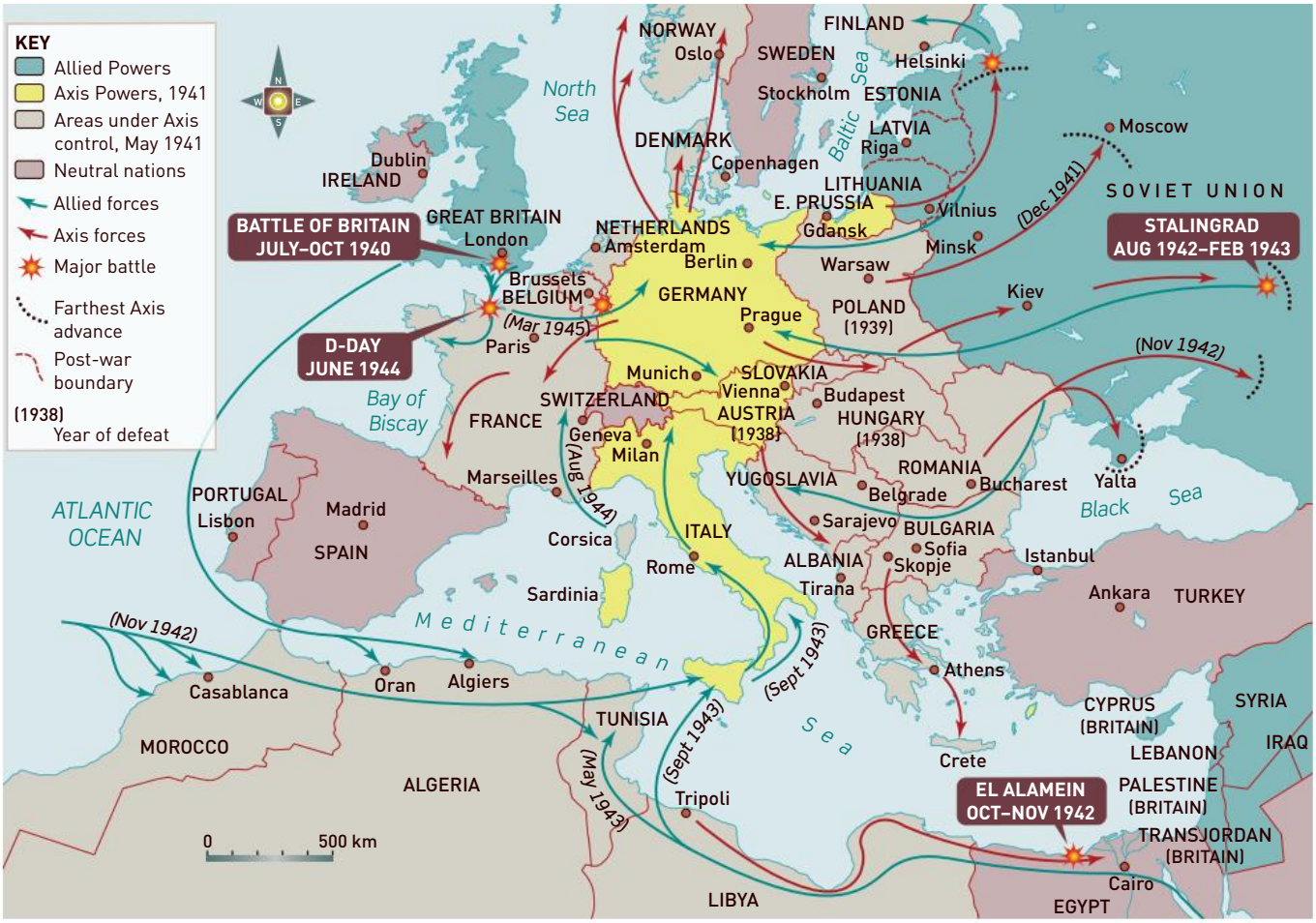
Continuing the *Blitzkrieg* strategy, on 10 May 1940, Germany attacked the Netherlands, Belgium and Luxembourg, beginning with air attacks. Germany gained control of the three countries in only two days. Also on 10 May, the German panzer (tank and infantry) divisions burst through the forest along the Belgium–France border to invade France. They had avoided the Maginot Line altogether.

German forces moved quickly through northern France, gaining control of territory. The rapid air and land attack, along with strong organisation, meant that though they were greater in numbers, the French and British troops were no match for the Germans. The panzer divisions were particularly effective. The British Expeditionary Forces and other Allied forces pulled back to the port of Dunkirk. Over a period of eight days, 338 226 Allied troops were evacuated.

German forces consolidated their occupation of northern France, including Paris, and an **armistice** was signed between France and Germany on 22 June. Southern France remained free from occupation and was led by the Vichy Government, based in the town of Vichy. The Vichy Government, led by Marshal Henri Pétain, cooperated with the German forces of the north.

During the French occupation, members of the French Resistance were important both in occupied and Vichy France. These networks carried out secret operations to provide information and perform acts of sabotage. General Charles de Gaulle played a key role in the Resistance from Britain. Some French military units evacuated from France also fought in the war as the Free French Forces.

Source 10.2.1 Adolf Hitler and other German officials in Paris, 24 June 1940



Source 10.2.2 Major military movements and battles during World War II in Europe

Battle of the Atlantic

Britain in particular relied on the shipping channel between the United States and Europe to receive food, raw materials, petrol and weapons. Therefore, controlling the waters of the Atlantic was important.

The Germans sank many ships in the Atlantic by torpedoing them from their U-boats (a type of submarine). These attacks took advantage of the 'air gap'—the area in the middle of the ocean that land-based aircraft could not reach to defend the vessels. After Germany occupied Norway and France, they controlled the ports in these countries, and U-boat attacks on the Atlantic channel increased. This caused major shortages in Britain, leading to the **rationing** of foodstuffs and materials, causing great hardship for British people.

The tide eventually turned against the Germans when the United States joined the war in 1942. US and Canadian forces alongside the British Royal Navy were able to provide more coordinated protection of merchant vessels. The development of longer-range aircraft and improved radar technology were key factors in this protection, as was the eventual decryption of German coded messages by British intelligence, allowing the Allies to pinpoint the location of the German U-boats and thus either evade or destroy them.

Did you know?

The British technology used to decipher the German Enigma codes was used in the development of computers. Alan Turing was a leading figure in the development of this technology.

Source 10.2.3 The crew of a US Coast Guard defending a convoy watch one of their explosives detonate during a U-boat attack in the North Atlantic Ocean, 17 April 1943

Battle of Britain, 1940

With France largely under his control, Hitler turned his sights on Britain. The plan was to first defeat Britain in the air. From July 1940, German planes began to bomb Britain. At first, air fields, factories and other strategic targets were bombed, and later cities. By the end of October, the Royal Air Force had held back the Germans and won the Battle of Britain, aided by improved radar technology and skilful RAF pilots who scrambled to meet the incoming German planes. The failure to win the aerial war thwarted Hitler's attempts to invade Britain.

Axis Powers

As a result of Germany's success, Italy entered the war on 10 June 1940, declaring war on Britain and France. In September, Germany, Italy and Japan signed the Tripartite Pact, establishing them as the Axis Powers. Hungary, Romania, Slovakia, Bulgaria, Yugoslavia (modern-day Balkan states) and Croatia also signed later.

Greece and North Africa

Italian dictator Benito Mussolini took advantage of Italy's alliance with Germany to attempt to expand Italy's territory by invading Egypt and Greece, in September and October of 1940 respectively. Both invasions failed. However, a subsequent invasion of Greece with German military support was successful. The Axis Powers held Greece from May 1941 until British, Australian and New Zealand forces liberated Athens in October 1944.

Italy had occupied part of Libya since before the war. Britain also already had bases in Egypt and controlled

the Suez Canal, protecting their vital access to Middle Eastern oil and their trade route to Asia and the Pacific. Commonwealth troops were sent to North Africa to reinforce British defence of their interests.

German reinforcements arrived to aid Italy in North Africa. German General Rommel led the Axis forces into Egypt in April 1941. The Axis and Allied troops fought battles throughout this territory until the Axis forces were defeated in November 1942 at the second Battle of El Alamein in Egypt. Australian soldiers played a vital role in this victory, including the well-known 'Rats of Tobruk', who for eight months held back Axis forces in their siege on Tobruk, Libya.

Combined Allied forces invaded Italy in September 1943. Mussolini was overthrown and King Victor Emmanuel III negotiated an armistice with the Allies. The country then fell into civil war between the German-occupied, pro-Mussolini north and the Allied-occupied, royalist south.

Soviet Union

Hitler had always intended to invade the Soviet Union, despite the non-aggression pact he had signed. He wanted to acquire Soviet land and resources, and defeat communism. Operation Barbarossa started 22 June 1941. The *Blitzkrieg* attack consisted of more than three million men in three major prongs, along a front of approximately 2000 kilometres. The Soviets were surprised by the attack and Germany had early successes, including the destruction of airbases. Soviet leader Joseph Stalin ordered Soviet troops to fight to the death. This order, along with Hitler's use of *Einsatzgruppen* initially led to enormous numbers of Soviet deaths. German forces reached outer Moscow in November 1941, but were halted there by winter.

Hitler expected the attack on the Soviet Union to take six weeks, but the increase in distance as troops moved further into the country stretched the German ability to supply the front. The Soviets 'scorched earth' policy (on retreat they destroyed all resources to prevent the Germans from getting them) worsened this situation.

Source 10.2.4 Australian soldiers guarding one of the headquarters at Tobruk in May 1941, photographed by war photographer Frank Hurley. Australian War Memorial

... on Friday 5 December [1941] ... the snow was a metre deep [near Moscow] ... [German] tanks were abandoned as engines failed to run in temperatures that had now dropped to [46 degrees Celsius] below zero. Light and heavy guns, their recoil mechanisms frozen solid, would not fire. Fingers that touched cold metal [stuck] to it ...

On 10 December [German Senior General Heinz] Guderian recorded a temperature of [–53] degrees [Celsius]. Soldiers lucky enough to find a soup kitchen discovered that boiling hot soup froze solid before they could finish it, while those who dropped their trousers to excrete in the open, died as their bowels were frozen solid.

Source 10.2.5 From *Blood, Tears and Folly: An Objective Look at World War II,* by Len Deighton, 1993

The Battle of Stalingrad

In 1942, following winter, the German army focused its attention on taking Stalingrad (modern-day Volgograd) on the Volga River. Their attack began with bombings on 23 August. Several days later, German troops entered the city and the battle was fought within the city, among the streets and buildings. In November, the Soviets launched new offensives from either side of the city, surrounding the German soldiers within. Hitler refused to allow the Germans to surrender and they attempted to bring in resources by air. The German soldiers and Soviet citizens were slowly starving. On 31 January 1943, the German commander Friedrich Paulus surrendered against Hitler's orders. Approximately two million Soviet and Axis soldiers died during the Battle of Stalingrad.

The Germans were now in retreat. They were eventually forced back by Soviet forces through Poland and Czechoslovakia all the way to Berlin.

The US and Japan

At the beginning of the war, the United States remained nominally neutral, but shipped goods to Britain and provided naval protection for merchant ships. When Japan bombed Pearl Harbor on 7 December 1941, the United States declared war on Japan. This prompted the other Axis Powers to declare war on the United States and thus the United States entered the war against the European Axis Powers, too.

Source 10.2.6 Stalingrad after the first two months of the German attack, November 1942

Source 10.2.7 Crowds in London celebrate VE Day (victory in Europe), 8 May 1945. Note the people making 'V for victory' signs with their hands.

Allied victory

The Allied campaign to liberate France from Germany began on 6 June 1944, with landing at Normandy known as 'D-Day'. The operation was planned six months earlier during the Allied Tehran Conference. The attack was carried out by air and sea from Britain, by more than 150 000 British, US and Canadian soldiers. On 25 August, with the help of de Gaulle's Free French Forces, the Allies took back Paris.

The Allies moved through Belgium and the Netherlands and then into Germany in September 1944. The capture of Berlin was left to the Soviet forces. They entered the city on 21 April 1945. On 30 April, Hitler committed suicide. On 7 May, Germany surrendered unconditionally. The Allies declared 8 May VE (Victory in Europe) Day.

ACTIVITIES

Remembering and understanding

1 Explain the term *'blitzkrieg'*.
2 List the countries controlled by the Axis Powers during World War II.
3 Which major battle led to the retreat of Germany from the Soviet Union? In which year did this battle conclude?

Applying and analysing

4 Why was control of the Atlantic important to both sides during World War II?
5 Summarise in a table the major events for Britain, Germany and the Soviet Union in World War II.

Evaluating and creating

6 Imagine you are a Free French fighter. Write a diary entry for 8 May 1945. In your writing, discuss some of your most memorable experiences and events during the war, as well as your feelings on the day.
7 Evaluate the factors that led to Allied victory in World War II.

UNIT 10.3

The course of the war in Asia

Japanese expansionism

In Japan in the late 1930s, the military-controlled government began to promote nationalist sentiment and an expansionist policy. As a small nation with few resources, Japan required imported materials to industrialise. It wanted to invade other territories to acquire these materials, and land for its growing population. In 1931, Japan had invaded Manchuria and in 1937 moved into China, beginning the Second Sino-Japanese War that continued until the end of World War II.

In 1939, Japan signed a non-aggression pact with the Soviet Union and in 1940 signed the Tripartite Pact with Germany and Italy. During these years, Japan also occupied the French colony of Indochina (modern-day Vietnam, Laos and Cambodia) and announced its intention to create the 'Greater East Asia Co-Prosperity Sphere', a cooperative of Asian nations free of Western colonialism led by Japan.

Although European colonial powers and the United States had been concerned by the Japanese expansionism, they followed their policy of appeasement. In any case, they saw Germany as the greater threat. The United States, under the Roosevelt Government, did loan money to China to assist in its defence against Japan, however.

It was not until Japan's occupation of Indochina that the Western nations began to act. Initially, in July 1940, the United States restricted the export of materials including iron and steel. Then in July 1941, it froze Japanese assets and placed further export restrictions on Japan, this time oil, an essential import for the Japanese. The British and Dutch governments followed suit. Japan attempted to negotiate its way out of the restrictions, but Japan and the United States could not come to an agreement. In September 1941, General Tojo Hideki, the former war minister and a proponent of attacks on Hawaii and Western colonies in South-East Asia, was chosen as Japan's Prime Minister by the emperor.

War in the Pacific

World War II began in the Pacific on 7 December 1941. That morning, Japan carried out an air strike on the US naval base at Pearl Harbor, Hawaii. The United States had moved its naval fleet there in 1940 to deter Japanese aggression. From January 1941, the Japanese military had been planning an attack on the fleet. For Japan to move into the US-administered Philippines and British colony of Singapore, Japan needed to ensure America's ability and willingness to respond was reduced.

Source 10.3.1 The destroyer *USS Shaw* was hit by three bombs during the attack on Pearl Harbor.

Source 10.3.2 The Asia–Pacific theatre, World War II

The Japanese attack was made without a declaration of war and the United States was not prepared. Almost 2500 US personnel were killed during the attack. Eight battle ships and more than 180 planes were damaged or destroyed. Aircraft carriers were not in the harbour at the time of attack, and most of the battleships were later repaired, so damage to the United States was not as great as Japan had hoped.

Later that day Japan, declared war on the United States and the following day the United States, Britain, the Netherlands and Australia, declared war on Japan. On 11 December, Japan's fellow Tripartite Pact signatories, Italy and Germany, declared war on the United States, and the United States reciprocated.

Japanese invasions continue

On the same day as the Pearl Harbor attack, Japan invaded the US territories in the Philippines, Guam and Wake; the British colony of Malaya (West Malaysia); Siam (Thailand); and seized Shanghai. Later that month, the Japanese attacked the British colonies of Hong Kong and Burma (Myanmar). By the end of the month, Siam, Hong Kong, Guam and Wake were in Japanese possession, and by the end of January 1942, British, Indian and Australian troops in Malaya had been pushed back to Singapore. Next, Japan set about invading the Dutch East Indies (Indonesia), the Australian colony of New Guinea, the Solomon Islands and Singapore. The occupation of the Dutch East Indies provided Japan with access to oil it desperately needed and the occupation of Singapore had great strategic significance.

The Allied forces in Singapore surrendered on 15 February after a week-long siege. Despite having fewer troops, the British considered the fall of Singapore a humiliating defeat and a great loss to the Allied forces. Britain relied on the naval base there to house British ships and defend the South-East Asian colonies. This defensive plan was known as the Singapore Strategy. Australia, having spent relatively little on its military during the interwar years, also relied on the Singapore Strategy for its own protection. With the fall of Singapore, this defensive strategy was no longer viable.

On 19 February, using New Guinea as a base, the Japanese bombed Darwin. Air attacks on northern Australia continued until late 1943. By the end of May 1942 the United States had surrendered the Philippines and the British and Indian forces had withdrawn from Burma to India. In mid-1942, Japan had the upper hand in the Pacific.

Did you know?

In May 1942, Sydney was attacked by Japanese submarines, and attacked again by air in June.

Source 10.3.4 John Curtin shakes hands with General Douglas MacArthur, Sydney, 8 June 1943.

Changing alliances

After declaring war on Japan, the United States moved troops to Burma and Australia among other locations. In March 1942, following the fall of Singapore, US and Australian forces started cooperating more closely in their defence of the Pacific. Prime Minister John Curtin insisted that Australian troops in the Mediterranean return to defend Australia, despite Churchill's preference to send them to Burma. The **Second AIF** 6th and 7th divisions returned to Australia, commanded by General Sir Thomas Blamey. In the new spirit of cooperation with the United States, Curtin allowed US General Douglas MacArthur, Supreme Commander, South-West Pacific, to command Australian troops.

> ***Without any inhibitions of any kind, I make it clear that Australia looks to America, free of any pangs as to our traditional links or kinship with the United Kingdom. We know the problems that the United Kingdom faces. We know the dangers of dispersal of strength, but we know too, that Australia can go and Britain can still hold on. We are, therefore, determined that Australia shall not go, and we shall exert all our energies towards the shaping of a plan, with the United States as its keystone, which will give to our country some confidence of being able to hold out until the tide of battle swings against the enemy.***

Source 10.3.3 Extract from Prime Minister Curtin's 1942 New Year's message

The tide turns

Japan turned its attention to Midway Island and the Aleutian Islands after Tokyo was bombed in April 1942. Securing these islands would help defend Japan itself. The United States deciphered a coded message and knew the attack was coming, so sent its entire fleet to Midway. Admiral Chester Nimitz led the US forces. Four Japanese carriers were lost, but only one US carrier.

New Guinea

The Battle of the Coral Sea

Port Moresby, New Guinea, was the last Allied post before Australia and a crucial airport held by Australian troops. The United States intercepted Japanese plans to invade through an **amphibious** operation in May 1942. On 7 May, Japanese and US forces engaged in the Battle of the Coral Sea. This battle between aircraft flying

Source 10.3.5 Map of Papua and New Guinea in 1941–45

from aircraft carriers was the first naval battle between two aircraft carriers that did not sight each other. The battle ended with no decisive victor and the Allies held Port Moresby.

Kokoda

At the end of June, to add protection to Port Moresby, MacArthur sent a group of soldiers from the Australian **CMF** to secure the airstrip at Kokoda and protect the northern coast of New Guinea. At the same time, the Japanese had landed near Gona, with plans to make an overland attack on Port Moresby.

Both the Australian and Japanese forces advanced towards each other along the Kokoda Track, crossing the rugged, jungle terrain of the Owen Stanley Ranges. Initially, the Japanese troops forced the inexperienced and outnumbered Australian soldiers to retreat. However, the Australian soldiers continued to resist and fight until Second AIF troops returning from the Mediterranean provided reinforcement in August. Japanese troops were short of supplies and Australian troops started pushing them back. From September, Japan began to withdraw troops from New Guinea, instead concentrating their forces in Guadalcanal.

The Allied offensive

Following these defensive victories, the Allies began forcing a Japanese retreat. At the end of 1942, the Allies were fighting to take back control of the Solomon Islands, first recapturing Guadalcanal (where the Japanese had been attempting to build an airfield), and re-entering Burma.

In May 1943, the Allies formally took an offensive approach to the Asia–Pacific campaign. They could do so due to the industrial might of the United States, which could quickly manufacture great numbers of ships, planes and weapons. The Japanese lacked the resources to compete with US industrial power and ran short of trained and experienced aircrew and soldiers. Nimitz and MacArthur employed a strategy of 'island hopping', in which their Pacific forces took back one island at a time in two prongs through the Pacific (MacArthur eastern and Nimitz western), getting ever closer to the Japanese mainland. Though the Allies targeted the islands that were less heavily defended, each amphibious landing on an island resulted in many casualties.

Towards the end of the war, Australia focused on producing food and manufactured goods for the war effort, but was still involved in the Pacific battles. Australian RAN and RAAF (Royal Australian Navy and Royal Australian Air Force) assisted the United States in numerous landings, including Hollandia in April 1944. Often though, MacArthur gave Australian forces the role of 'mopping up' after the US forces made the initial landing. Many Australians died fighting the remaining Japanese troops in isolated garrisons in New Guinea and Borneo. These battles and the resulting loss of lives were arguably unnecessary.

Allied victory

Towards the end of 1944, the Allied dominance became even more pronounced. In October 1944, the Allies resoundingly won the largest naval battle of the war—the Battle of Leyte Gulf—in the Philippines. In this battle, the Japanese lost a total of 26 ships, while the Allies lost only six.

Did you know?

The Battle of Leyte Gulf was the first time kamikaze pilots were strategically used by the Japanese. Kamikaze pilots made suicide flights into ships in an attempt to damage or destroy them.

In March 1944, Tokyo was firebombed by new B-29 bombers, killing up to 80 000 people. These bombers could fly long ranges and bomb from greater heights than previous planes, and had a major influence on the war. The Allies used them to firebomb industrial areas of Japan, resulting in the deaths of hundreds of thousands of civilians.

The Allies won bloody battles for the Japanese islands of Iwo Jima and Okinawa in April–June of 1945. The Battle of Okinawa led to more than 12 000 US and 70 000 Japanese deaths (not including civilians), and provided the Allies with a base for invading the Japanese mainland. Despite the human loss the Japanese had endured, the naval blockade cutting off their supply lines and the surrender of Germany, Japan still did not surrender when prompted to do so by the Potsdam Declaration issued by the Allies on 26 July.

As a result, US President Harry Truman ordered atomic bombs to be dropped on Hiroshima on 6 August and Nagasaki on 9 August. Both cities were devastated. Yet, still Japan did not surrender. It was not until the Soviets had invaded Manchuria and further bombings of Japanese cities, that Emperor Hirohito surrendered, 15 August 1945.

Source 10.3.6 US Marines disembarking from an amphibious vehicle, Okinawa, Japan, April 1945

Source 10.3.7 The Japanese delegation led by Foreign Minister Mamoru Shigemitsu (centre in a top hat) and Army Chief of Staff General Yoshijiro Umezu (left of Shigmitsu) arriving on board the *USS Missouri* in Tokyo Bay, to formally surrender, 2 September 1945

ACTIVITIES

Remembering and understanding

1. Why did Japan begin expanding its territory in the late 1930s?
2. Describe the events of the attack on Pearl Harbor.
3. Describe the strategy of 'island hopping' using amphibious landings.
4. Who signed the Tripartite Pact and in what year?

Applying and analysing

5. Identify the main reasons for the fall of Singapore in 1942.
6. Based on Source 10.3.3 and the text, develop an annotated concept map showing the relationships between Britain, the United States and Australia during World War II.

Evaluating and creating

7. Create a table listing the major battles fought in the Asia–Pacific region during World War II. Add columns with the date, location, participants, outcomes and consequences of each battle. You may need to conduct further research to complete the table.
8. Evaluate the description of Australia's role in the Pacific towards the end of World War II as 'mopping up'.

UNIT 10.4

Where Australians fought

Australian Infantry Force

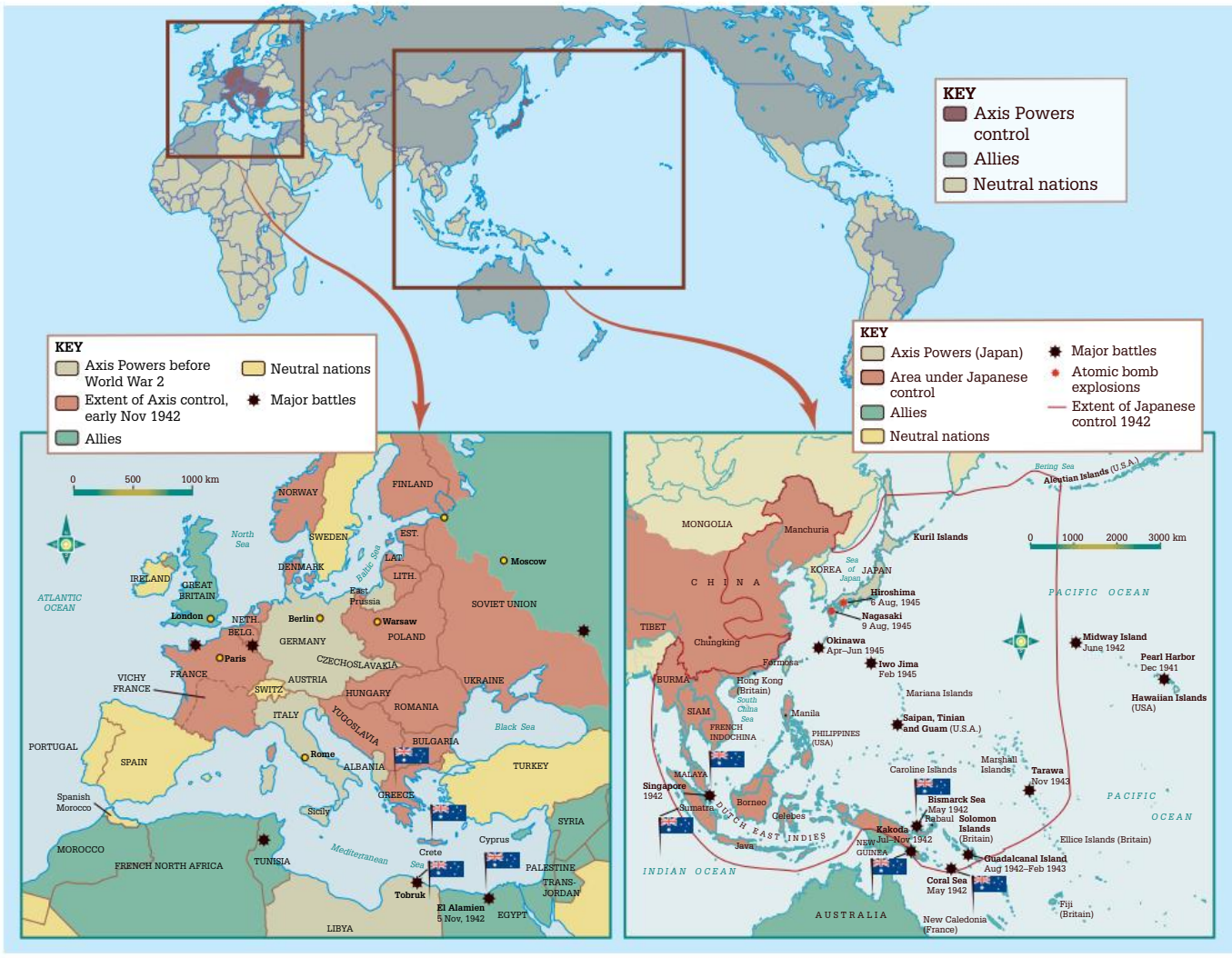
The different divisions of the Second AIF fought around the following regions:

- 6th Division: North Africa (Tobruk), Greece and Crete in the Mediterranean Sea, New Guinea/ Pacific (see Source 10.4.1)
- 7th Division: Syria, Lebanon and New Guinea/ Pacific
- 9th Division: Egypt (Battles of El Alamein)
- 8th Division: served with British and Commonwealth forces defending Malaya and Singapore; after Singapore fell in 1942, they were captured and became prisoners of war.

With Japan's victory in Singapore, the Australian Government, population and military assumed a Japanese invasion was imminent. The 6th and 7th divisions were ordered to return and defend Australia by the Prime Minister John Curtin, despite British Prime Minister Churchill's objections.

The Commonwealth Militia Force

Two Commonwealth Militia Forces (CMF) were sent to New Guinea to defend Port Moresby from the Japanese. The CMF was poorly armed and trained, and it was not intended that they serve overseas.



Source 10.4.1 Locations of Australian troops, during World War II

Source 10.4.2 Australian troops were besieged in 1941 in Tobruk, North Africa, refusing to surrender against the German Afrika Korps. They were nicknamed the 'Rats of Tobruk'. Australian War Memorial

However, they were the only Australian troops in New Guinea until the 6th and 7th Divisions returned from Europe and North Africa.

Royal Australian Navy

The Royal Australian Navy (RAN) served initially in the Mediterranean where the cruisers *Sydney* (later sunk by the Germans in 1941) and *Perth*, with RAN destroyers, regularly fought the Italian navy. All of the RAN's ships in the Mediterranean were later withdrawn to the Pacific and Indian oceans, where they served either with the British Fleet to protect convoys or supported American operations, notably in the Battle of the Coral Sea and the Asia–Pacific region.

Royal Australian Air Force

The Royal Australian Air Force (RAAF) units and squadrons aided British and US forces over the oceans around South-East Asia; they flew from coastal airfields in Britain to attack German forces off Norway, and bombed Japanese shipping and submarines along the northern coasts of Australia. The RAAF also flew many missions in support of British operations in North Africa and RAAF units remained in the Middle East for the duration of the war. Hundreds of Australians also flew with British Royal Air Force (RAF) units in Britain, India and Burma as part of the RAF's Commonwealth squadrons.

Attacks on Australia

In 1942, the Japanese attacked the northern coasts of Australia. Darwin was bombed in February 1942, with more raids occurring in April, June, July and November of that year, and in March 1943. The last raid occurred in November 1943. Towns in northern Queensland and Western Australia were also bombed during the same time period. In May 1942, Sydney was attacked by midget Japanese submarines and shelled by another submarine.

ACTIVITIES

Remembering and understanding

1 List the major locations where Australian forces fought around the world.

Applying and analysing

2 Create a timeline of events from 1939 to 1945.

3 Study Source 10.4.2. Identify the conditions of the Battle of Tobruk.

Evaluating and creating

4 Identify the key decisions the Prime Minister John Curtin and the Australian Government made in 1942. Explain why they made these decisions.

UNIT 10.5

The fall of Singapore and POWs

Defending the island

Singapore was the key to the British defence strategy in the Asia-Pacific region. It was also a naval base Britain created as the leading naval power in the Asia-Pacific region.

The troops

In 1941, British and allied troops flooded into Malaya and Singapore to protect the peninsula and island. A total of 130 000 soldiers from Britain, India, Australia, Malaya and Singapore dwarfed the 60 000 to 65 000 Japanese advancing on them. The AIF 8th Division was also protecting Australia from the southern march of the Japanese.

Air power

The defence of Singapore required many weapons and a great deal of ammunition. In particular, it needed between 350 and 550 aircraft. This number of aircraft never eventuated and much of what was there, an estimated 150 aircraft, was antiquated. Despite the best efforts of the pilots, including three squadrons of the RAAF, Singapore's defences and the city itself were bombed by Japanese air power.

There must be no thought of sparing the troops or population; commanders and senior officers should die with their troops. The honour of the British Empire and the British Army is at stake.

Source 10.5.2 Sir Winston Churchill sent this telegram to the troops defending Singapore, 10 February 1942.

Underestimating the enemy

The local press [British in Malaya], by consistently disparaging the quality of the enemy's air force, and otherwise showing a poor opinion of his general efficiency, helped to build up a dangerously complacent attitude and in Malaya ease and complacency flourish without outside assistance.

Source 10.5.3 Extract from a British report on the fall of Singapore, 1942

Source 10.5.1 Signing of the surrender in Singapore, February 1942. Lithograph of a Japanese painting showing General Percival second from left in the foreground; General Yamashita is opposite him. Australian War Memorial

Promised air parity [equality with Japanese air power] in January! Continual vague talk of counteroffensive which never happened, presumably because the Japs retained the initiative and we continued to conform to his movements ... Why were beach defences not prepared? They may have been in some parts; there certainly was not as much as a strand of wire or a trench on the North East.

Source 10.5.4 Extract from a report by an officer who escaped Singapore, 1942

The British military in Singapore had been over confident, believing they would easily defeat any Japanese attack. On 10 December 1941, two British warships—the battleship *Prince of Wales* and the battle cruiser *Repulse* had gone to the Malay coast where the Japanese had landed. But the British RAF had lost nearly all its aircraft in Japanese attacks on Singapore by 9 December 1941, just two days after Pearl Harbor. Without RAF protection from Singapore, both ships were sunk by Japanese aerial torpedo bombers.

The attack on Singapore

The Japanese did what the British least expected and:

- did not attack by sea as anticipated
- came through Malaya not Singapore
- entered the jungle which the British thought impenetrable and so were able to bypass British defences blocking roads
- advanced with great speed using light tanks and soldiers on bicycles and the British had no time to reorganise defences.

When the British and allied troops retreated to Singapore island:

- beach defences had not been built so defenders were not protected and there were no obstacles to a Japanese landing
- the Japanese air force bombed key defence points and infrastructure.

With the water supply running low, constant bombing and little or no anti-aircraft ammunition, General Percival (overall commander) surrendered to General Yamashita on 15 February 1942.

Prisoners of war

All troops captured at Singapore, many tens of thousands of British, Indian, Malay and Singaporean troops and 22 000 Australians became Japanese prisoners of war (POWs). They were sent mainly to Changi POW camp in Singapore where they suffered terrible treatment.

Japanese Imperial Army soldiers had been taught with ***Bushido*** beliefs that an enemy who surrendered dishonoured their country and family. As a result, allied prisoners received whatever treatment the Japanese thought fit to give. Japan had not signed the Geneva Convention on POW treatment, which detailed the standard of humane treatment expected for prisoners. POWs lived a life of work, beatings and torture, were deprived of food and medical attention, and suffered arbitrary death.

Source 10.5.5 Japanese POW camps across South-East Asia

Source 10.5.6 *Meal time at Changi*, drawing by Murray Griffin, POW, 1943. Australian War Memorial

Source 10.5.7 Changi, c. 1945. State Library of Victoria

Source 10.5.8 An Australian prisoner of war suffering the effects of malnutrition while working on the Thai–Burma Railway, 1945. Australian War Memorial.

Changi POW camp

Changi was a collection of British Army barracks and a small civilian prison spread across several sites. The Changi complex held as many as 70 000 POWs, usually with five men in a room originally built for one person. The harsh conditions also caused illnesses such as malaria, beriberi, dysentery and infections from wounds, which increased the death rate among the prisoners. Coupled with the terrible treatment they received and despite their physical condition, POWs were forced to work for food and groups of POWs at Changi were constantly sent to other camps in the Japanese-occupied areas to work. Failure to work to a Japanese soldier's satisfaction meant beatings at the very least. Disrespect often resulted in torture and brutal death such as beheading.

Thai–Burma Railway

Prisoners gave their guards inventive nicknames: 'The Boy Bastard', 'The Boy Bastard's Cobber', 'Fishface', 'Poxy Paws', 'Babe Ruth', 'Gold Tooth', 'Paddle Feet', 'The Snake', 'Modern Girl', 'The Spitting Gunso', 'The Boy Shoko', 'The Black Bomber', 'Maggot', 'Boofhead', 'Snake Eyes', 'Charlie Chaplin', 'Barrel Guts', 'Wire Whiskers', 'Tom Mix', 'Cookhouse', 'Foghorn', 'Woof Woof'.

Source 10.5.9 Nicknames given to Japanese guards by the Australian POWs. Nicknames remained one of the few ways prisoners could retaliate against men who controlled their lives.

In 1943, Japan's military needed to supply its troops who were fighting the Allies in Burma so decided to build a railway to link Thailand with Burma. About 60 000 Allied POWs and 200 000 Asian labourers were forced to build 420 kilometres of track by hand through dense jungle. Constant physical labour, lack of food and the unhealthy tropical environment caused the deaths of at least 2800 Australians, as well as more than 11 000 Allied prisoners and perhaps 75 000 Asian workers. Amid the suffering and death, individuals such as Weary Dunlop—a courageous leader and compassionate surgeon—became famous for never giving up and always helping others.

ACTIVITIES

Remembering and understanding

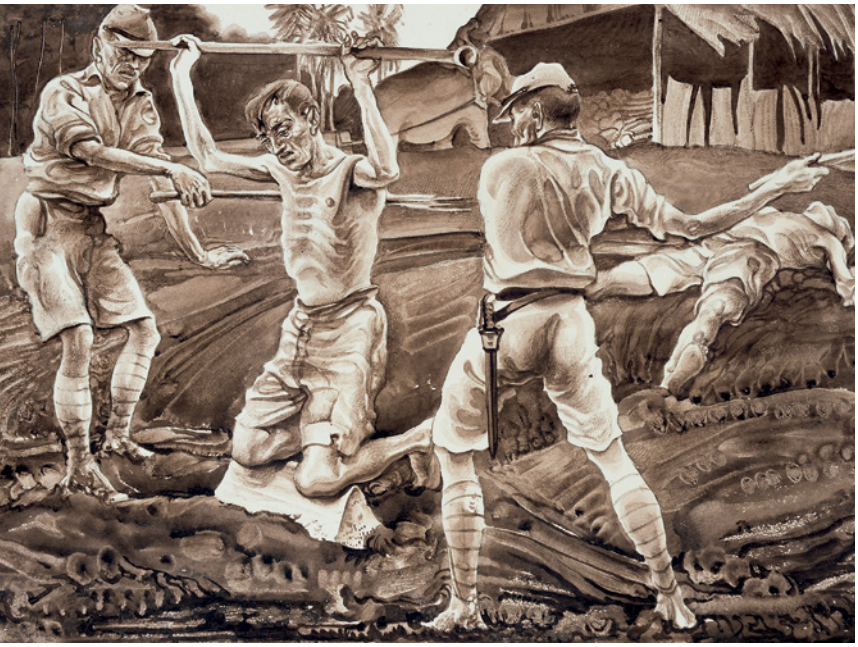
1 Why didn't the British have sufficient aircraft protecting Singapore before the Japanese attack?
2 What tactics did the Japanese use to defeat the British in Malaya?

Applying and analysing

3 Study Source 10.5.3.
   a What opinion did the British have of Japan's fighting ability?
   b How do you think this affected defence preparations?
4 Study Source 10.5.4.
   a What weaknesses in Singapore's planned defences are referred to by the writer?
   b Why do you think the state of the defences was as suggested by the writer?
5 Study Sources 10.5.6 and 10.5.8. What can you see in these images in relation to food deprivation, private belongings and comfort, climate effects and conditions encouraging disease?

Evaluating and creating

6 Create a short entry for the journal of either an Australian POW or a Japanese guard at Changi. You may choose to discuss how you came to be there, the conditions, the work or your feelings.



Source 10.5.10 An incident on the Burma railway, drawing by Murray Griffin, POW, 1946. Australian War Memorial

UNIT 10.6

The Battle of Britain

Background to the battle

In June 1940, the Germans had control of northern France and forced the Allied evacuation at Dunkirk. Britain was now the only unoccupied European nation at war with Germany. If Britain did not agree to peace terms, Hitler planned to invade. To do so, the Germans needed to neutralise the British Royal Air Force (RAF), so they could safely ferry their troops across the English Channel. Hitler ordered Hermann Goering, Luftwaffe Commander-in-Chief, to wipe out the RAF and gain control of the British skies.

The battle begins

From July 1940, German planes fought to take control of the English Channel. They engaged the RAF in the air and targeted merchant ships sailing to Britain. Targeting ships had two advantages: it prevented supplies reaching Britain and drew out the RAF planes from their homeland skies. The next month, the Germans began bombing strategic British targets. These included airfields and factories, and the radar bases that formed the RAF's early warning system around the southern coast.

Following the RAF bombing of Berlin in late August, Hitler made a speech threatening to 'eradicate their [Britain's] cities'. When Britain failed to surrender, Hitler instructed the Luftwaffe to target British cities.

The Blitz

On 6 September 1940, the Luftwaffe launched a massive attack on London. Almost 1000 German aircraft attacked. The British lost 31 fighters that day and the Germans, 39. The poundings continued for days in a campaign known as 'the Blitz'. Gradually the British fought back. On 15 September, the climax of the German attacks, the Germans lost 79 aircraft and the British, 36. The tide of the battle turned.

On 17 September, Hitler postponed plans for an invasion of Britain and stopped daytime attacks on British cities. Indiscriminate night bombings of cities including London, Plymouth and Coventry continued, until 31 October. Minimal bombings continued until December, but poor weather made these difficult. From July to December, the bombings killed approximately 40 000 civilians.

Source 10.6.1 A milkman making home deliveries during the Blitz in London, 1940

The first 'war in the air', the Battle of Britain, was nearly over. Despite the destruction and the huge loss of life that had occurred, the morale of the civilian population remained high.

> ***Last night a huge fire was seen blazing over London. It was the docks—was burning from 5–6 hours to under control at 4 am. Went up to Castle Road to watch with some Army officers. Went to cricket … Diddy came. Going up to London with Babe and Diddy. Hope we don't get an air raid. Saw one of our planes crash yesterday while we were at cricket … How wonderful for them. First official report on wireless about the London bombing and fires says London docks, oil refineries, store houses all fired. 400 dead, between 13–14 hundred seriously injured, Railways and communications badly damaged.***
>
> ***So glad they let us know and didn't pretend no such bombing took place. We can take it.***

Source 10.6.2 Diary extract from a woman living in Epsom, England, 8 September 1940

How the British won

A number of factors helped the British to win the Battle of Britain. Britain was fighting off the Luftwaffe in their home territory. The RAF pilots could land to refuel and reload ammunition, and return to service if they parachuted from a damaged plane. The German pilots flew from bases in France. When they made it across the Channel, they arrived with minimal fuel.

The Luftwaffe began the battle with inaccurate intelligence, which had suggested Britain had fewer planes than it did. The Germans also underestimated the effectiveness of the British early warning radar system. The system enabled the RAF to scramble fighter planes and intercept bombers when Luftwaffe planes were detected.

So much owed

Nearly 540 RAF Fighter Command pilots and another 1000 RAF pilots from other commands died in the battle. Approximately 35 Australian pilots flew with the RAF Fighter Command. Fourteen of these men were killed. Eight Australians reached 'ace' status, meaning they had shot down more than five enemy aircraft. On the German side, approximately 2700 German aircrew were killed.

Source 10.6.3 Pilots scramble to their Hurricane fighters at an RAF base, August 1939

The Battle of Britain was Hitler's first defeat. The British victory gave new hope to the conquered peoples of Europe. It also strengthened the resolve of the British people to withstand Hitler. On 20 August 1940, Winston Churchill gave a speech in which he paid tribute to the pilots who flew during the battle: 'Never in the field of human conflict was so much owed by so many to so few.'

Did you know?

One of the top 10 aces in the RAF was an Australian from Cooma, Pat Hughes, who shot down 14 enemy aircraft.

ACTIVITIES

Remembering and understanding

1 Which were the two main nations were fighting in the Battle of Britain?
2 What was 'the Blitz'?

Understanding and applying

3 Compare the Battle of Britain with earlier battles that had occurred within World War II.

Evaluating and creating

4 Discuss the changes in German and British tactics during the Battle of Britain. Were they justified?

UNIT 10.7

Kokoda

Japan advances

In 1942, Japan had a strategy to isolate Australia (not invade) from the United States. The Japanese conquered areas of the Pacific but there was a significant weakness around Papua New Guinea where Australia held Port Moresby—a crucial airport that threatened Japanese areas with possible aerial attack. If the Japanese took Port Moresby, they could fly bombers to attack locations in Australia as far away as Brisbane.

The Japanese navy had earlier tried to invade Port Moresby but had been turned back with a major loss in the Battle of the Coral Sea in May 1942. With the loss of air power, the Japanese were forced to land troops, well-equipped with mountain artillery and machine guns, on the northern shore of New Guinea. The aim was to march over the Owen Stanley Range and capture Port Moresby.

Australia's response

Prime Minister Curtin had ordered the return of the 6th and 7th Divisions from the European and African war zones, but they were not due to arrive until after

Source 10.7.2 Members of 39th Battalion, CMF, parade after weeks of fighting in the Kokoda campaign, 1942. Australian War Memorial

Source 10.7.1a Extent of Japanese occupation in the Pacific. The airbase at Port Moresby in New Guinea was crucial to their security and ability to attack Australia.

Source 10.7.1b The Kokoda Track—the north–south route between Gona and Port Moresby

the Japanese had begun their march. The only troops remaining to Australia were the Civilian Military Force (CMF) or militia. A militia group called Maroubra Force, consisting of the 53rd and 39th CMF battalions (see Source 10.7.2), was sent to intercept the Japanese as early as possible along the Kokoda Track leading to Port Moresby. They met in the Kokoda area on 23 July 1942.

The CMF

In 1942, as the European war worsened, the total number of militia had reached more than 250 000 men. During 1939–1940, the keenest young men and some of the more experienced had volunteered for the AIF, lured by patriotic pride and expectations of adventure. The CMF, being largely conscripts, was therefore comparatively low on enthusiasm, skills and experience.

MILITIA UNITS FIGHT JAPS AT KOKODA—Enemy's Match in Jungle Warfare

SOMEWHERE IN AUSTRALIA Sun: Australian troops who have given such a good account of themselves in Jungle skirmishes around Kokoda are normally enlisted militia units. This can now be revealed following several weeks of stiff fighting, during which they have held up the advance of numerically superior Japanese forces, and inflicted heavy casualties in daring raids.

Source 10.7.3 Geoffrey Hutton, war correspondent, *The Argus*, 24 August 1942

Did you know?

Militia troops were derogatively referred to among AIF soldiers as 'chocos' (chocolate soldiers who melted under heat of battle) and 'koalas' (a protected species, which could not be shot or exported).

Saturday 29 August, 1942—bullets everywhere—hell on earth amongst the clouds in the mountains.

Source 10.7.5 Extract from the diary of Private Stewart John Clarke 2/14 Battalion, describing the Kokoda Track

Kokoda Track fighting

The two CMF battalions numbered a total of 1600–1700 men and were vastly outnumbered by the attacking Japanese force, which was made up of 13 500 men with more troops still in Buna. The poorly trained and equipped CMF engaged in fighting retreats slowing the Japanese advance. Despite heavy losses, the CMF battalions repelled and evaded the Japanese force until the 7th Division arrived late in August. The commander of the Maroubra Force, Brigadier Arnold Potts, aided by Lieutenant-Colonel Ralph Honner, believed that the CMF would surely lose to the well-equipped, more numerous Japanese. However, they believed that a slow fighting retreat would at least

Source 10.7.4 The 25-pounder guns of B Troop, 14th Field Regiment, Royal Australian Artillery, being pulled through dense jungle in the vicinity of Uberi on the Kokoda Track, September 1942. Australian War Memorial

force the Japanese to advance warily and slowly as they stopped to respond to Australian holding actions, and this would use up time.

The fighting conditions were extraordinarily difficult. The Owen Stanley Range consists of steep mountains that can rise to 4000 metres. Troops marched on steep slopes, usually covered in mud and jungle, at a terribly slow pace. Heat, humidity, vision obscured by dense jungle, malaria, frequent saturating rain, insects, mud, breathing difficulties at altitude, lack of food, lack of sleep, forever moving on, all added to the great danger of fighting a well-equipped and more numerous enemy which killed prisoners.

Victory on the Kokoda Track

By mid-September, the fight was now led by the returned 7th Division, which had quickly adapted to the jungle conditions, for example learning to dye their uniforms jungle green for camouflage. The 7th Division fought the Japanese advance to a standstill just outside Port Moresby by which time the Japanese supplies had been exhausted. In 1943, all Japanese soldiers were slowly, and with much bloodshed, ejected from New Guinea or killed. In the entire New Guinea campaign, almost 6000 Australian soldiers and more than 8000 Japanese soldiers were killed, with thousands more contracting illnesses and sustaining injuries.

Factors helping the Australians

The near impassable terrain prevented military transport of food, medicines and ammunition to the troops. The difference between the Australian and Japanese supply problem was the Australian 'Biscuit Bomber'—planes dropping supplies by parachute. The Australian forces were thus advantaged because of aircraft, which was able to drop just enough supplies. The local population also supported them. They did not fight but acted as bearers of wounded soldiers and carried supplies to the Australians. Many soldiers owe their lives to the New Guineans who they called 'Fuzzy Wuzzy Angels'.

Source 10.7.6 Imita Ridge—the 'Golden Stairs', 1942. When climbing the stairs, soldiers had to lift their leg over logs and put their foot down on the step in what was frequently a puddle of mud and water up to 15 centimetres deep. Australian War Memorial

Source 10.7.7 Today, many people walk the Kokoda Track in memory of the soldiers who fought there.

ACTIVITIES

Remembering and understanding

1 Why did the Japanese want to capture Port Moresby?
2 Explain why were there no regular AIF troops to help the CMF in July 1942.
3 What were the differences between the CMF and AIF?
4 Where could the CMF be sent to fight after the change to legislation in 1943?

Applying and analysing

6 Construct a timeline of the events referred to in the unit. Label clearly as CMF, AIF, US and Japanese troops actions.
7 Study Source 10.7.3. Why can the skirmishes around Kokoda 'now be revealed'?

Evaluating and creating

8 'Armies march on their stomachs.' What relevance has this quote to the New Guinea campaign?
9 Imagine you are Prime Minister Curtin. Write a short communiqué to Winston Churchill justifying your decision to return Australian troops to New Guinea in 1942.

UNIT 10.8

Australian women

New opportunities

World War II saw major growth in the role and status of women. As men went to war and jobs became vacant, women became the main source of labour. By taking on roles as radio operators, mechanics, clerks and farmers, women broke free of the home and their traditional roles.

New roles for women

As men left for military service, women did both paid and unpaid work in both military and commercial spheres. They were trained for highly skilled positions such as radar operators and intelligence analysts, transport roles such as drivers and pilots, service roles such as cooks and nurses, and labour roles such as farmers and mechanics. Their places of work varied from production lines to shipyards, offices, airfields and farms, and their tasks varied from sewing uniforms to nursing injured soldiers, answering telephones and building aircraft.

At the beginning of the war, women's pay was as low as 54 per cent of the men's rate. By the war's end, women's average pay rate had risen to approximately 70 per cent of that of men's, and women's pay rate in jobs that had traditionally been male only had risen to as high as 90 per cent.

Source 10.8.1 Six women workers representing the WRANS, AWAS, WAAAF, AWLA, AAMWS and a munitions worker on a wartime poster. The poster, first printed in 1943, aimed to encourage women to help the war effort. Australian War Memorial

Female POWs

Women were not permitted to serve in battle; however, approximately 3500 Australian military nurses served in battle zones. A number of these women became POWs in Singapore and Japan among other places. Their accounts, like those of the men, reveal the inhumane treatment they received as prisoners of the Japanese, including lack of food and filthy conditions.

> ***They felt, I think, that if we didn't eat we might die and that'd be a jolly good idea.***

Source 10.8.2 Military nurse Florence Syer talking about her time in a Japanese POW camp

The varied role of women in war

Women with families also had significant new roles to fill at home. They continued to perform their traditional tasks of cooking, cleaning and caring for children. They also had to manage the finances and the additional difficulties of rationing and, often, smaller incomes.

Women's organisations

The Federal Government organised women into groups to support key military needs. The following organisations were officially sanctioned and promoted as suitable for women in Australia during World War II.

Women's Auxiliary Australian Air Force

The Women's Auxiliary Australian Air Force (WAAAF) was formed in March 1941. Women performed most air force roles, including skilled technical work as signallers, pilots and mechanics, intelligence work and service roles such as cooks and stewardesses, making up 10 per cent of RAAF ground staff. More than 18 000 women were serving by October 1944 and, in total, 27 000 enlisted during the war.

Source 10.8.3 WAAAF members cleaning and overhauling a RAAF plane, 1945. Australian War Memorial

Australian Women's Army Service

The Australian Women's Army Service (AWAS) was formed in August 1941. Women who enlisted were required to be single and between 18 and 45 years of age. They performed skilled technical work as telecommunications officers and mechanics, did administration work and filled service roles as cooks and support staff. Approximately 20 000 members were serving by January 1944 and, in total, more than 24 000 women joined the service during the war. Members served with the Royal Australian Artillery, helping in Fixed Defence positions, for example operating anti-aircraft gun radars and searchlights. They also served overseas towards the end of the war, with 350 of their members in New Guinea.

Women's Royal Australian Naval Service

The Women's Royal Australian Naval Service (WRANS) was officially formed in October 1942 although training had begun in April of that year. Most members took on work as telegraphists, clerks, drivers, cooks, stewardesses and orderlies, but some had roles as technical specialists involved in classified work. Approximately 3000 women served over the course of the war.

Australian Women's Land Army

The Australian Women's Land Army (AWLA) was formed in July 1942. Members enrolled full-time for twelve months or as temporary members to assist during peak periods. More than 2000 permanent members and 1000 auxiliaries were serving by December 1943. Women performed roles in all aspects of agricultural life, and were therefore crucial to food production. The land army was a civilian organisation (government plans to make the AWLA a fourth women's military service did not eventuate before the war ended). Members were paid by the farmers who employed them, not the government. Many women worked on farms outside the AWLA, as women already working or living on a farm were not eligible to become members.

Australian Army Medical Women's Service

The Australian Army Medical Women's Service (AAMWS) was formed in 1942. Most women were from the Red Cross or St John Ambulance volunteers. More than 8500 women served as nurses, nurse's aides and technicians in military hospitals in Australia and overseas.

Women after World War II

Immediately following the end of the war, many women had to return to their former roles as wives and mothers. The government aimed to support returning servicemen to take up their former employment. However, the wartime experience and responsibilities of women, whether in government, or business was still deeply valued. And for some businesses, retaining skilled and experienced women on staff was an advantage—especially as women were still cheaper to pay.

ACTIVITIES

Remembering and understanding

1 Explain how women helped the Australian Defence Forces (army, air force and navy).
2 Why did some businesses think it was an advantage to hire women rather than men after the end of the war?

Applying and analysing

3 How were women's lives affected by working in income-producing occupations?

Evaluating and creating

4 Discuss how the war changed the lives of working women.

UNIT 10.9

Conscription, manpower controls and rationing

During the war, it was essential to increase manufacturing of weapons and wartime goods, and to sustain production of food and other essential products. To maintain the economy and the war effort, the Australian government imposed tight wartime controls, requiring sacrifices and hard work of the Australian public.

After Australia declared war on Germany, Prime Minister Robert Menzies' United Australia Party government enacted the *National Security Act 1939*. This legislation overrode the Constitution and the need to follow regular parliamentary processes to make laws for the period of the war. Measures introduced under this act included the requirement to carry identification cards detailing employment and marital status, imposition of fixed profit margins on businesses, banning the Communist Party, restrictions on building and repairs, and increased women's pay rates.

Conscription

The *Defence Act 1903* gave the government the power to conscript men to fight for the defence of the Australian mainland. This army was the Citizen Military Force (CMF). In 1939, a volunteer army was established to fight overseas. This army was the Second Australian Imperial Force (Second AIF), with the First AIF having fought in World War I.

Source 10.9.1 South Australian CMF soldiers training on a machine gun, c. 1940–45. Australian War Memorial

During World War I, two referendums proposing conscription for overseas service were defeated. John Curtin had campaigned against conscription at the time. As Opposition Labor Leader, Curtin opposed it again when Menzies re-introduced three months' compulsory military training with the CMF for any unmarried men aged 21, on 1 January 1940.

In October 1941, Curtin was elected Prime Minister and his stance on conscription changed. By late 1941, with Japanese forces moving into the south Pacific, taking territory, the threat to Australia was real. In mid-1942, Curtin extended conscription to the CMF to all men aged 21–35 and all single men aged 35–45. With US troops stationed in Australia, helping defend Australia and its territories, the US pressured Curtin to conscript Australians to help defend their own country. In February 1943, Curtin enacted the *Defence (Citizen Military Forces) Act 1943*, which expanded the definition of 'home defence' to include the South-West Pacific, allowing for conscripts to defend Australia further afield. Unlike World War I, during World War II most Australians were in favour of conscription due to the perceived threat of Japanese invasion.

Manpower controls

To prevent a shortage of labour and resources, in 1940, the government created a List of Reserved Occupations (Provisional). This document listed the occupations, such as engineers, considered essential to the war effort and the nation's livelihood. At this time, people in these occupations could still enlist if they wanted to.

As more Australians enlisted and fighting began in the Pacific, labour shortages in Australia increased. Women filled some of the shortage, but more labourers were needed. In January 1942, the government created the Manpower Directorate to ensure production and labour were directed toward essential wartime industries. In March 1942, the directorate released a Schedule of Reserved Occupations and Industrial Priorities.

The directorate had great powers over the labour force and businesses, deciding which industries were important and which were non-essential. Any businesses within non-essential industries had to apply to the government for labour. As of April 1942, every person (male or female) was required to log their occupation in a national register. The directorate had the power to compel labourers to work within a particular industry, known as 'direction'. The directorate raided public places to ensure everyone who could work was working. The directorate could also prohibit people in particular occupations from enlisting and assign people a particular role within the armed services.

Rationing

In response to the shortage of labour and resources, rationing was imposed on the Australian public. From 1940, certain foods were rationed at certain times, including butter, sugar, milk and tea (normally imported from Asia). Ration book coupons were to be presented when buying food. Only one book of coupons was provided per year, so they had to be managed carefully to ensure they would last. People were encouraged to be self-sufficient and grow their own food. Purchase of items deemed luxuries or necessary to the war effort was also rationed or restricted, including clothing, petrol, furniture and firewood. Although living conditions were generally lowered during the war period, resource shortages and rationing were not as severe in Australia as in Britain.

Rationing aimed to reduce unnecessary consumption, to focus manufacturing on war necessities like weapons and to ensure that necessary resources, like food, were shared fairly among the public. In 1942, Curtin's government carried out an austerity campaign (see Source 10.9.2) encouraging people to live simply and to make sacrifices during the war. Other restrictions included limits on travel and sporting events. The government encouraged people to invest the money they saved by rationing into government bonds called Victory Loans, which were directed to the war effort.

Most Australians accepted rationing and restrictions, and many invested in bonds. They did so with the understanding that they were all drawing together in the war effort. Still, a black market for rationed goods emerged from which people purchased rationed goods without coupons.

> ***...austerity is as much a condition of the mind and the soul as the material manifestation of a determined effort to do everything necessary for victory.***
>
> ***Each of us must freely and voluntarily abandon all those distractions, luxuries and purchases that unnecessarily employ manpower, materials, machinery, plant and capital that could be utilised in the war effort.***

Source 10.9.2 Austerity speech by Prime Minister Curtin, 3 October 1942

Source 10.9.3 A customer reads a ration notice in a butcher shop, Melbourne, 1944.

ACTIVITIES

Remembering and understanding

1. Which legal measure overrode the Australian Constitution? What year was it enacted?
2. When was conscription to the CMF re-introduced during World War II and by which leader?

Applying and analysing

3. Outline the reasons for and results of the list of reserved occupations.
4. Discuss the impact of rationing and other austerity measures on the Australian public and the military based in Australia.

Evaluating and creating

5. As a class, carry out a debate on the topic, 'Curtin was correct to enact the *Defence (Citizen Military Forces) Act 1943.*'

UNIT 10.10

Propaganda and censorship

Source 10.10.1 Propaganda poster of World War II, 1943. Australian War Memorial

Propaganda in Australia

In World War II Australia, propaganda was formalised in the Department of Information created by the Australian government's *National Security Act 1939*, and guided by the Director-General of Information, Keith Murdoch. The department produced propaganda in the form of posters, news articles, radio programs and films shown before movies.

Propaganda exaggerated positive events, actions and thoughts while negative events and actions were minimised or ignored. This extended to oversimplification of difficult issues and hyperbole in place of reporting. Propaganda also manipulated the public using emotion and fear. In the early stages of the war, propaganda vilified the Germans and Italians. When the Japanese entered the conflict and Australia was directly threatened the propaganda escalated to new levels, and the Japanese were vilified to the point of stereotype and racism (see Source 10.10.1).

Censorship in Australia

During World War II, the Australian government amended the National Security Act so that radio, film and all printed materials could be regulated. The Department of Information was granted significant powers to withhold or release information to the public. The government even had the power to force newspapers to print the government's 'view' on issues.

The government used these powers to suppress information that might cause panic among the public or turn public support against the war effort. For example, the government tried to conceal the knowledge that Australia was ill-equipped for war and largely isolated from its Allies. A specific example of censorship occurred when Melbourne's newspaper, *The Argus*, wrote about two air raids on Darwin on 21 February 1942. The headline read: '17 killed in raids on Darwin: 6 enemy planes shot down.' In reality, almost 250 people had died. It was argued that this downplaying of negative news prevented alarm in Australian society.

The department also had the power to censor soldiers' letters. The government read private letters and could remove any information considered sensitive to the military effort (see Source 10.10.2). Telephone calls were also monitored and could be cut at any point.

'Enemy aliens'

With the coming of the war, nationals of countries at war with Australia were deemed 'enemy aliens.' As soon as war was declared in 1939, more than 1000 German men were arrested and interned in special camps for the rest of the war. When Italy entered the war, thousands of resident Italians were also interned. Similarly, Japanese nationals were later detained. During the war, as many as 7000 Australian residents

were held in **internment camps** across Australia and approximately 8000 people were sent to Australia to be interned. The camps were generally located away from major cities to ensure that the 'spies' were isolated from the enemy.

Well-known large camps across Australia included:

- Enoggera, Queensland
- Harvey, Western Australia
- Hay, New South Wales
- Holsworthy, New South Wales
- Loveday, South Australia
- Rottnest Island, Western Australia
- Tatura/Rushworth, Victoria
- Cowra, New South Wales.

Source 10.10.2 Poster urging people to be careful not to discuss military information in private letters, 1943. Australian War Memorial

Internment camps varied in standard. In many camps the internees grew fruit trees and tended vegetable gardens. At first, however, camps were often hastily built and bare of all but accommodation buildings.

Cowra camp saw the unsuccessful revolt of the Japanese, a large majority of whom were POWs, in the Cowra Breakout on 5 August 1944. During the breakout a total of 231 Japanese and four Australian soldiers were killed.

Source 10.10.3 Internment camp, Cowra, New South Wales, 1944, Australian War Memorial

ACTIVITIES

Remembering and understanding

1 What government legislation created a department for censorship?
2 Why do you think 'enemy aliens' were kept in camps far from main cities?

Applying and analysing

3 Study Source 10.10.1. Describe how the enemy is shown. How would this make people feel?

Creating and evaluating

4 Was censorship of news and communications during the war was justified? Discuss.

UNIT 10.11

The Holocaust

Genocide

Genocide is the act or process used to kill an entire ethnic group or race. Throughout human history none has been as systematic and brutal as the **Holocaust** of World War II and the murder of more than six million people.

German anti-Semitism

Anti-Semitism or hostility against the Jews has been recorded back to ancient times and was not unique to Germany or Europe in the 1930s and 1940s. The Nazi Party came to power with a policy of making Germany great again after the humiliating defeat of World War I and part of this policy included creating a pure 'Aryan' or 'master race'. There was no place in the new Germany for racial, social or political enemies. This included Jews, Slavs, Sinti and Roma people (often referred to as gypsies), political dissidents, criminals and homosexuals.

Hitler's anti-Semitism

Adolf Hitler's anti-Semitism was outlined in his book *Mein Kampf*, which was published in two volumes in 1925 and 1926.

> ***The Jewish way of reasoning thus becomes quite clear … lusting after blood and money, the whole earth would become the prey of that hydra. Should Germany be freed from its grip, a great menace for the nations of the world would thereby be eliminated.***

Source 10.11.1 *Mein Kampf* by Adolf Hitler

> ***My conduct is in accordance with the will of the Almighty Creator. In standing guard against the Jew I am defending the handiwork of the Lord.***

Source 10.11.2 *Mein Kampf* by Adolf Hitler

Germany 1933–38

When the Nazi Party came into power in 1933 they increased propaganda against the Jews, blaming them for Germany's post-war economic problems. They then began to systematically take away the rights of Jews so that they:

- were banned from working in the government
- had their shops and businesses boycotted
- had the right to vote removed
- had their German citizenship revoked
- were banned from the army
- were banned from marrying non-Jews
- were expelled from German schools.

Germany 1938–41

From 1938 the Nazi authorities encouraged violent mobs to attack Jews. This violence culminated in *Kristallnacht* or the 'night of broken glass' when at least 7000 Jewish-owned businesses were destroyed and 1688 synagogues were destroyed. During this period, Jews were forced to live in certain areas of the city in ghettos and the number of Jews sent to **concentration camps** increased. From 1941 all Jews had to wear the Star of David on their clothing.

The 'Final Solution'

In 1941, Germany controlled Poland, the Baltic States and Byelorussia. In these territories there were an estimated 4.3 million Jews. German Waffen-SS units began their systematic murdering. In 1942, the Wannsee Conference held in Berlin sought a 'final solution to the Jewish problem'. The solution was deportation or extermination of all Jews from German-occupied territories.

Concentration camps

The term 'concentration camp' describes the prison camps created by the Nazis. Concentration camps, or death camps were specially designed killing centres. Every type of camp experienced death on a daily basis. When Jews, criminals and others were rounded up, the most physically able were housed in labour camps

as a holding centre before going out to work each day in the local area. The majority of these workers died of starvation. The SS operated the most important killing centres. Both SS men and women beat victims regularly, even to death, in order to get more work from them.

Systematic death

Starvation and brutality were features of every type of camp. The brutality started before victims even arrived. From the moment of identification, victims were herded (with violence) into ghettos or other holding centres awaiting further 'processing'. When 'ready', the German authorities herded victims onto transport, usually cattle trains. Conditions on the trains were crowded, with people forced to stand up without water or food for days before arriving at the concentration camps. Then they undressed, apparently for showers, and entered special buildings in large naked groups. The doors were locked and Zyklon B gas pellets dropped onto the floor. This was the systematic and shocking end for millions of victims. Before this mechanised system was fully developed or if the victims were far from these special-purpose centres, mass shootings were the norm and bodies were burned and buried in common graves.

Source 10.11.3 Jewish women and children on their way to their deaths at Auschwitz. Yad Vashem Photo Archive

Source 10.11.4 Czesława Kwoka, age 14, went to Auschwitz with her mother in 1942. Within three months, both were dead. Wilhelm Brasse, the photographer (and fellow prisoner) recalled: 'She was so young and so terrified ... She cried but she could do nothing'. Auschwitz-Birkenau Museum

Concentration camps liberated

As the Allies invaded German-occupied areas between 1944 and 1945, they liberated the concentration camps. In many of the camps, the German guards tried to destroy evidence of their crimes by quickly shooting the remaining prisoners or burning them alive while locked in their sleeping quarters. In many cases, Allied officers forced captured SS and Gestapo to load bodies onto trucks or perform other tasks they had ordered prisoners to do.

The Nuremberg Trials

At the end of the war the Allies held a war crimes tribunal in the German city of Nuremberg from1945 to 1947. Many German officers were executed for their crimes.

ACTIVITIES

Remembering and understanding

1 Define the term 'genocide'.
2 Which group supervised the operation of the 'Final Solution'?

Applying and analysing

3 Explain how Hitler and the Nazis were able to take away the rights of Jewish people in Germany.
4 What groups of people were targeted by Nazis? Why?

Evaluating and creating

5 Research the reaction of German civilians to the Holocaust during World War II through primary source documents online. Discuss the reactions based on your research.

UNIT 10.12

Atomic warfare

Manhattan Project

In 1939, President Roosevelt established the Advisory Committee on Uranium, which was charged with determining whether the creation of a nuclear fission weapon was possible. The committee confirmed the possibility and the president made the decision to commence production of atomic bombs. In September 1942 this secret work, codenamed the Manhattan Project, commenced.

By 1943, there were more than 100 000 scientists, engineers and clerks spread across the United States who were working on the Manhattan Project. In July 1945, the first atomic bomb was tested successfully in New Mexico.

> ***Now I am become Death, the destroyer of worlds.***

Source 10.12.1 J. Robert Oppenheimer (chief scientist on the Manhattan Project) after viewing the atomic bomb test at Los Alamos, 1945

The end of the war in Asia

In July 1945, Japan refused to surrender unconditionally. Soon after, President Truman stated that an atomic bomb was the only way to end World War II quickly and force Japan's unconditional surrender with minimal bloodshed.

On 6 August 1945, an atomic bomb, dropped by US B-29 bomber *Enola Gay*, destroyed Hiroshima, Japan. An estimated 80 000 people were killed instantly. Three days later, the B-29 *Bockscar* released a second atomic bomb on Nagasaki and approximately 50 000 people were killed.

Long-term effects of the bomb

By 1950, it is estimated that another 200 000 people had died as a result of radiation poisoning and related causes. These two bombs represent the only nuclear attack in history.

Six days after the second atomic bomb had been dropped on Nagasaki, Japan surrendered. The horrific effects on the bombs' victims shocked observers, who described cities reduced to ash and watched terribly injured people just waiting to die. The development and use of nuclear weaponry hailed a new era in war.

Divided opinions

The ethics of the decision to use atomic bombs in World War II continues to divide academics and society in general. The shocking effects, both immediate and long term, on the civilian population (including children, families and Korean forced labourers) conflicts with the belief of many that war should target 'those responsible'. Others argue that the war, if fought conventionally, would have inflicted a great number of deaths both in Japan and America. However, a number of historians discount this as the President Truman's main motivation in using nuclear weaponry. Other motives put forward by these historians include the desire to assert power over communist Russia, show strength in the domestic political arena, satisfy scientific curiosity and justify the immense expenditure on the research and development of the bombs.

The nature of an atomic explosion

The bomb that destroyed Hiroshima was called 'Little Boy'. Experts suggest it had 13–16 kilotons of TNT in destructive power. In turn, the Nagasaki bomb had about 21–23 kilotons of TNT and was called 'Fat Man'. As a reference, 1 megaton of TNT is enough energy to power an average household for more than 100 000 years (1000 megatons = 1 kiloton).

The atomic explosions created waves or blasts of high pressure that killed people instantly, as well as blowing apart buildings and structures. In Hiroshima, steel-framed buildings 4 kilometres away from the centre of the blast were destroyed. Resultant flying debris caused further death and injury.

Source 10.12.2 A view of the devastation caused by the atomic bomb that was dropped on Hiroshima in Japan on 6 August 1945

In the first few milliseconds of an atomic blast, a wave of UV radiation is released that can raise the temperature on a person's skin by 50 degrees, even when they are nearly 4 kilometres away. This flash radiation would have instantly killed people and set fire to flammable materials in the area.

The blasts also emitted gamma rays and neutrons, causing radiation injury and illness. Even if not immediately deadly to people in the area, they caused many deaths as a result of organ failure, internal bleeding and cancer in the succeeding months.

ACTIVITIES

Remembering and understanding

1 What reason did President Truman state for dropping the atomic bombs on Japan?

Applying and analysing

2 Study Source 10.12.2. Describe the scene.

Creating and evaluating

3 Discuss the arguments for and against dropping the atomic bombs on Japan.

Inquiry tasks

Weaponry of World War II

Many new efficient weapons were developed in World War II. New tactics (methods of fighting) were also introduced that changed warfare.

You can make your own digital scrapbook of World War II weapons by creating a multimedia presentation illustrating a collection of weapons used during the conflict.

1 Find and collect images for each of these World War II weapons:
   - aircraft carrier, for example a Japanese aircraft carrier such as the *Shokaku* or *Akagi* and/or a US aircraft carrier such as the Yorktown or Lexington
   - dive bomber planes, for example a Douglas Dauntless or *Stuka*
   - torpedo bomber planes, for example Fairy Swordfish, *Grumman* Avenger
   - bomber planes, for example the Lancaster bomber, the Flying Fortress, the B29 Superfortress
   - fighter planes, for example the Spitfire, the P40, the *Mitsubishi* Zero
   - tanks, for example the Sherman, the Tiger
   - submarines, for example German U-Boats
   - machine guns, for example the Sten gun, *Schmiesser*
   - battleships, for example *Tirpitz, Bismarck, Prince of Wales, Missouri*.
2 Place each image on a separate slide of your multimedia presentation.
3 Write a very short summary of the technology's capabilities, for example speed, carrying capacity, fire power/rate, size, bomb load and defences appropriate to that technology to accompany each image.
4 On the slide after each image, write an explanation of how the weapon demonstrated major developments and improvements over their World War I equivalents, overcame problems of warfare or created a new advantage for the nation that used it.

Research and discussion

Aircraft attacks were often highly specialised for specific purposes, demonstrating the exceptional flexibility of air power. In pairs or small groups, research one mission where aircraft was able to win or significantly affect a battle or theatre of war.

Present the evidence that air power superiority gave significant advantage or even won the campaign or battle in one of the following events:

- Battle of Midway, June 1943
- Battle of Britain, July–October 1941
- Attack on Pearl Harbor, December 1941
- Raid on Schweinfurt, October 1943
- Marianas Turkey Shoot, June 1944
- Operation Bodeplatte January, 1945.

As a class, discuss the aims and limitations on both the attackers and defenders, their advantages and disadvantages and the end results.

Holocaust survivors

Research the life of a Holocaust survivor and write a short biography about them. In your biography you should include information about the individual before, during and after the Holocaust. Be sure to include references to primary sources, such as quotes from the survivor or records from a concentration camp, trial, diary or similar. Include an image if possible.

Life in Australia

Imagine you are a teenager in Australia during World War II. Write a letter to friend describing everyday life.

In your letter include information about:

- rationing (food, petrol, clothing etc.)
- blackouts
- schooling
- roles of men and women.

Australia in the war

Create an annotated timeline of significant battles and attacks during World War II in which Australians were involved. This should include those that occurred within Australia and at the various global fronts. Your annotations on the battles and attacks could include:

- the way in which Australians were involved
- any significant achievements
- the effect on the course of the war.

Source 10.13.1 Australian Government poster, 1942. Posters such as these carried sophisticated messages with much symbolism. Australian War Memorial

GLOSSARY

Allies countries that opposed the Axis Powers—Britain, the Soviet Union (Russia), United States, China, France, Australia and New Zealand

amphibious related or suited to both sea and water

armistice an agreement by parties in a war to stop fighting

Axis Powers Germany, Italy and Japan and their controlled allies such as Hungary and Romania

Blitzkrieg German for 'lightning warfare' in which massive aerial bombardment on infrastructure is followed by rapid overwhelming ground attacks

Bushido 'way of the warrior'—a code of honour and conduct for samurai warriors established in medieval Japanese history and similar to the medieval code of chivalry for European knights

CMF Citizens Military Force, made up of conscripted soldiers, defending Australia

concentration camp a brutal prison for those perceived to pose a political, intellectual, religious or racial threat to the Nazi state

embargo ban on trade and commerce with a country as a form of pressure or punishment against its international policies or aggressive acts

genocide a mass extermination, or its attempt, of an entire cultural ethnic group of people in order to wipe them out of existence

Holocaust genocide of Jews and others, including communists and mentally ill people by Hitler and the Nazis; death sites include Auschwitz, Belsen, Buchenwald

internment camp camp where people of German, Italian and Japanese background were kept in Australia during World War II to prevent them from conducting any enemy activity

rationing allocating a fixed amount of goods or services available for each person

Second AIF Australian Imperial Force in World War II (the First AIF served in World War I)

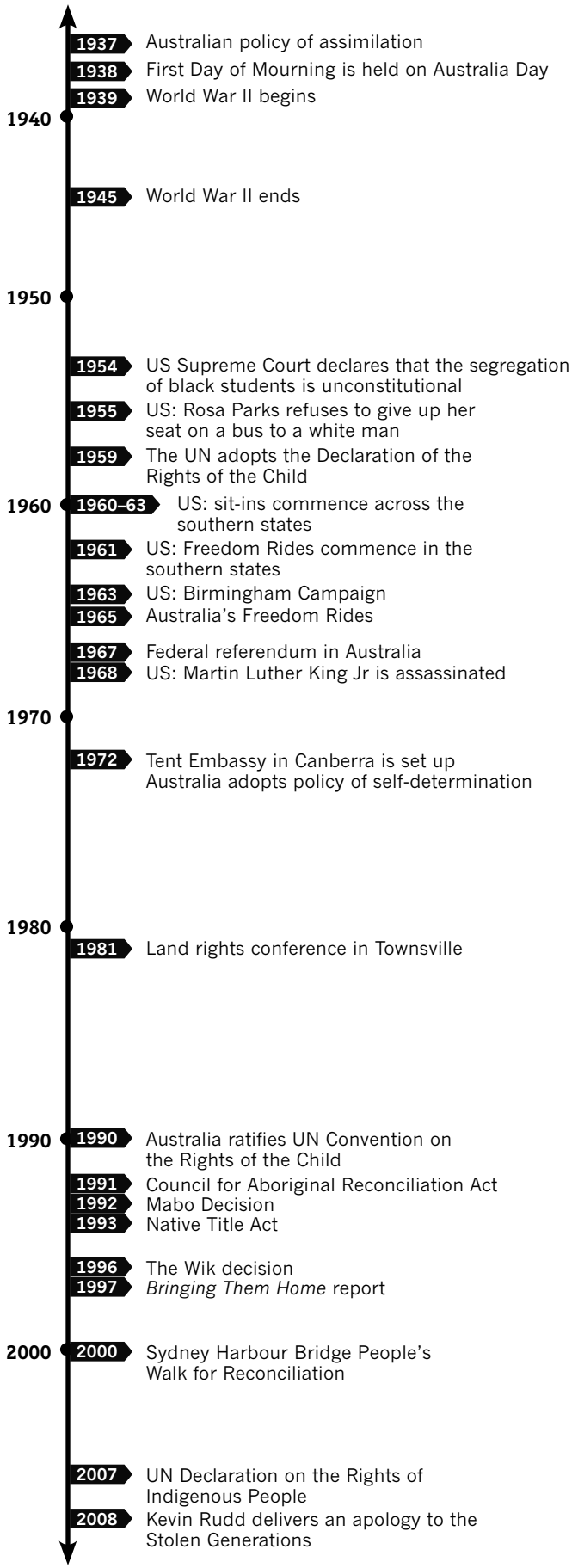
CHAPTER 11

Rights and freedoms

The actions undertaken by individual nations before and during World War II sparked international concern regarding human rights. The Holocaust, treatment of prisoners of war and abuse of power by totalitarian governments led to the need for international cooperation and universal standards for the rights and treatment of all people.

In the decades following the war, countries such as Australia were forced to assess the way they treated particular groups within their nation. Aboriginal and Torres Strait Islander people lived in poor conditions, with a lack of proper accommodation, food and health care. **Civil** activism during this time challenged the foundation of Australia's constitution and helped to make significant gains in the rights and freedoms of Indigenous Australians.

Source 11.0.1 The Convention on the Rights of the Child (1990) was a landmark development towards achieving greater universal rights and freedoms.



Source 11.0.2 Timeline of rights and freedoms

UNIT 11.1

Universal Declaration of Human Rights

... disregard and contempt for human rights have resulted in barbarous acts which have outraged the conscience of mankind ...

Source 11.1.1 Extract from the preamble to the Universal Declaration of Human Rights, referring to the atrocities committed in World War II

Origins and purpose of the UN

The United Nations (UN) was founded in 1945 in the aftermath of World War II. It was clear after three decades of international turbulence and two world wars that there needed to be an international organisation to minimise the chance of global conflict.

The UN replaced the League of Nations, a similar organisation that had been formed after World War I. The League had been established for a similar reason, yet had failed in its purpose to stop another world war.

On 26 June 1945, 50 countries committed to this new organisation, whose purpose was to maintain international peace and security, foster positive relations among nations, and promote social cohesion and human rights. On 5 October, Poland signed, and on 24 October 1945 the UN officially came into existence with 51 member nations.

Origins of the Universal Declaration of Human Rights

During World War II, the world witnessed violations of human rights on a scale never before seen. An estimated 50–80 million people were killed during the course of the war. As allied troops entered territory previously controlled by the Nazis, they soon discovered that millions of Jews, as well as Roma and Sinti people (often referred to as Gypsies), political dissidents, homosexuals and Slavic people, had been killed as part of the Nazi 'Final Solution' to exterminate the Jews of Europe and get rid of people they saw as 'undesirable'. Around 1.5 million of these were estimated to have been children.

The international community was determined to avoid anything like this happening again, and believed a charter should be drawn up to complement the newly formed United Nations. A draft Declaration on Fundamental Human Rights and Freedoms was presented at the very first meeting of the UN General Assembly in 1946.

Articles of the Declaration

The first 10 articles of the UN Universal Declaration of Human Rights indicate the key rights it seeks to protect.

1. All human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood.
2. Everyone is entitled to all the rights and freedoms set forth in this Declaration, without distinction of any kind, such as race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status. Furthermore, no distinction shall be made on the basis of the political, jurisdictional or international status of the country or territory to which a person belongs, whether it be independent, trust, non-self-governing or under any other limitation of sovereignty.
3. Everyone has the right to life, liberty and security of person.
4. No one shall be held in slavery or servitude; slavery and the slave trade shall be prohibited in all their forms.
5. No one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment.
6. Everyone has the right to recognition everywhere as a person before the law.
7. All are equal before the law and are entitled without any discrimination to equal protection of the law. All are entitled to equal protection against any discrimination in violation of this Declaration and against any incitement to such discrimination.
8. Everyone has the right to an effective remedy by the competent national tribunals for acts violating the fundamental rights granted him by the constitution or by law.
9. No one shall be subjected to arbitrary arrest, detention or exile.
10. Everyone is entitled in full equality to a fair and public hearing by an independent and impartial tribunal, in the determination of his rights and obligations and of any criminal charge against him.

Source 11.1.2 From the UN Universal Declaration of Human Rights, 1948

Drafting and adopting the Declaration

Eleanor Roosevelt, widow of American President Franklin D. Roosevelt, was a highly influential figure in the drafting stage of the Declaration. Her husband was the man who coined the name 'United Nations' and, together, they had a deep interest in seeking a universal standard for the rights of all individuals.

A commission was set up to formulate a draft International Bill of Human Rights. Eighteen members, each representing various political, cultural and religious backgrounds worked together to reflect a common understanding and write the Declaration. The members represented countries such as the United States, France, the USSR (the Soviet Union), the United Kingdom and Australia, as well as other nations. The commission met for the first time in 1947, and continued to write and redraft Articles of the Declaration until its acceptance by the UN General Assembly on 10 December 1948.

Significance of the Declaration

The Declaration focused on the social, economic, civil and political rights of individuals, regardless of their race or creed (see Source 11.1.2). The universal nature of these rights meant that all member nations would be accountable for upholding them. When the General Assembly voted on the adoption of the Declaration, 48 nations voted in favour while six communist countries abstained from voting.

Source 11.1.3 Dr H.V. Evatt, Australia's Minister for External Affairs, signs the UN Charter, 1948.

Considering the world was then divided into Eastern and Western blocs in a period of tension that marked the early stages of the Cold War, the completion of the Declaration in less than two years was an impressive feat and symbolic of a global desire to uphold such values.

Australia's involvement

Dr H.V. Evatt, Australia's Minister for External Affairs, played a significant role in the formation of the UN, and headed the Australian delegations. He was the elected president of the 3rd General Assembly when the Declaration was signed and became a strong advocate for a proposed international human rights treaty. Evatt was influential in the appointment of Australian diplomat William Hodgson to the drafting committee.

Further rights documents

Eleven years later, in 1959, the UN also adopted the *Declaration of the Rights of the Child*, to provide additional safeguards for children's rights, though Australia did not ratify this document until 1990. In 2007, the UN also adopted the *Declaration on the Rights of Indigenous Peoples*. The Australian Government voted against the Declaration, but would give its general, if conditional, endorsement in 2010.

ACTIVITIES

Remembering and understanding

1 Outline the purpose of the UN.
2 Describe Australia's involvement in the formation of the Universal Declaration of Human Rights.

Applying and analysing

3 Choose the two rights listed in Source 11.1.2 that you believe are the most important and discuss your reasoning with a partner.
4 What aspects of the Declaration make it 'universal'? Is there any wording that you find contradictory and why do you think that is the case?

Creating and evaluating

5 Originally, member nations were responsible for upholding the rights set out in the Declaration. Discuss the reasons for this and the difficulties it created.

UNIT 11.2

Early Aboriginal and Torres Strait Islander activism

The struggle for rights and freedoms up to 1965

Aboriginal and Torres Strait Islander activism was a direct result of federal government policies on the Australian Indigenous way of life. For over 50 000 years, Australian Aboriginal and Torres Strait Islander peoples had lived in communities or language groups based on social, cultural and spiritual laws handed down to them by their ancestors.

Government policies did not take into account these laws and customs, and failed to recognise the deep significance of Indigenous people's connection to the land. Not only were their laws and customs ignored, but severe and devastating conditions were placed on Indigenous people that restricted and governed virtually every aspect of their lives. These included:

- excluding Indigenous children from schools
- making it illegal for children of mixed race to live on Aboriginal reserves
- enforcing a policy of protectionism, where Indigenous people were controlled without rights or responsibilities
- banning Indigenous people from drinking, possessing or supplying alcohol (or methylated spirits)
- banning Indigenous people from carrying firearms
- banning Indigenous people from marrying non-Indigenous people without permission
- paying lower wages to Indigenous labourers, who were paid far less than their white counterparts by law
- controlling reserves and living conditions.

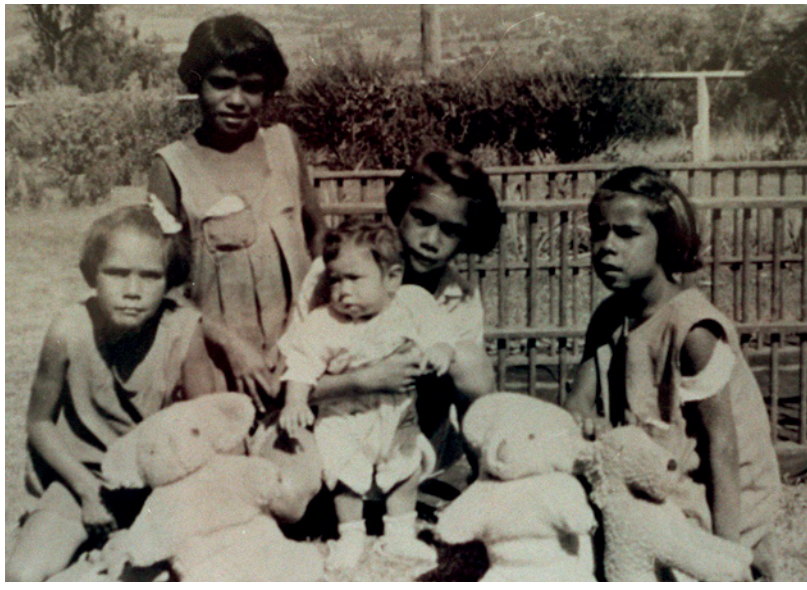
Laws differed across states, making it more complicated and difficult for Aboriginal or Torres Strait Islander people who wanted to move interstate.

Other measures of discrimination included:

- completely disregarding or ignoring Indigenous people's civil rights by not counting them in the Census and not allowing them the right to vote
- denying Indigenous people maternity allowance, old-age pensions and invalid welfare payments.

The Aboriginal Protection Board

By the late 19th century, the ideas of **Social Darwinism** were becoming more influential. It was believed that 'inferior' races would die out and that Indigenous people needed to be 'civilised' in order to survive. The Aborigines Protection Board, a NSW government agency, was established. It was responsible for implementing and administering laws and policies for Aboriginal and Torres Strait Islander peoples from 1883 to 1969. It had notable power and control over most aspects of Aboriginal people's lives, including access to health, education, employment, housing on stations and reserves, and the removal of children from their families. This last practice was to become known in later years as the **'Stolen Generations'**.



Source 11.2.1 Stolen Generation girls at the Cootamundra Domestic Training Home for Aboriginal Girls, New South Wales

Activist organisations

The Australian Aboriginal Progress Association

Known as the first Aboriginal protest movement, the Australian Aboriginal Progress Association (AAPA) was established in 1925 under the direction of its president

Fred Maynard. Maynard had fought to help families rescue their children who had been taken into custody by the board authorities.

The AAPA soon had 11 branches across New South Wales. The main purpose of the AAPA was to fight against the removal of children from their parents and to gain land rights. The AAPA was significant as it forged links between different communities over a wide area and brought attention to the cause. It promoted the status of Indigenous Australians and sought to abolish the New South Wales Aborigines Protection Board (see Source 11.2.2).

Although the organisation grew rapidly in 1925, it began to fade out in 1928 after the failure of its appeals to both the state and federal governments, as well as King George V. Jack Patton later reformed the group in 1937. The AAPA was to prove a significant inspiration for future civil rights **activists**.

... we accept no conditions of inferiority as compared with European people ... the European people by the arts of war destroyed our more ancient civilisation ... [and] by their vices and diseases our people have been decimated ... But neither of these facts are evidence of superiority. Quite contrary is the case ...

Source 11.2.2 From a letter to NSW Premier Jack Lang in 1927, written by Fred Maynard

The Australian Aborigines League

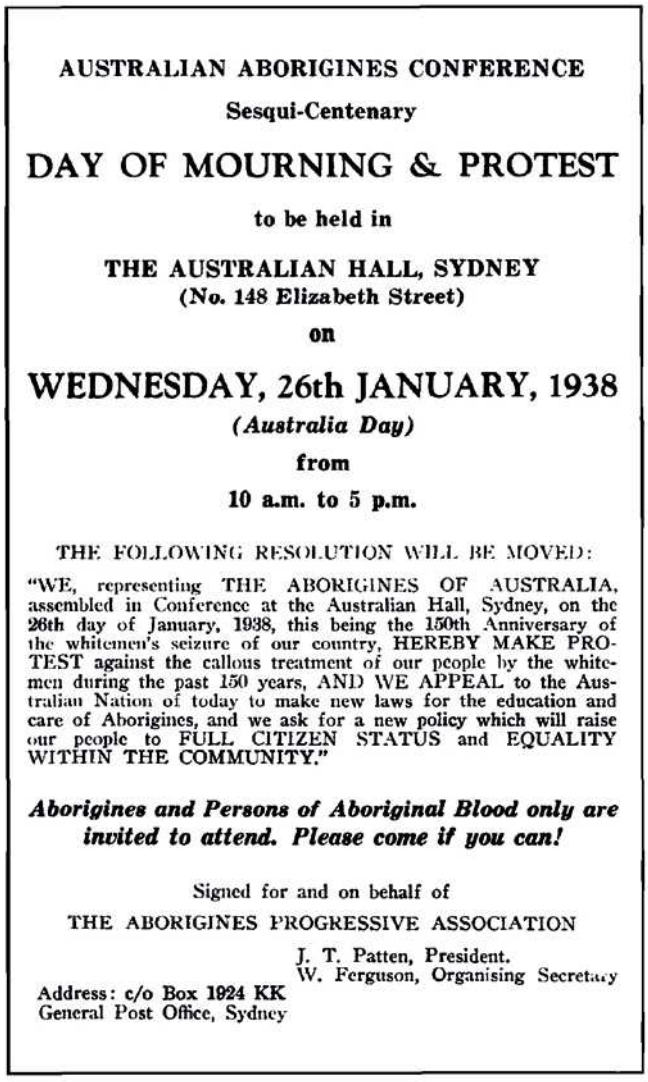
In 1932, the Australian Aborigines League (AAL) was founded by William Cooper together with other Aboriginal people who were to walk off the Cummeragunja Station in 1939. It continued to gain active support from non-Aboriginal individuals and in 1937 the AAL sent the federal government a petition with 2000 signatures, to be forwarded to King George VI. The petition requested that the king intervene in their situation as previous petitions to state governments and to his father King George V had failed. The AAL requested legal recognition and a representative in parliament to advocate Aboriginal interests. These requests were denied and the petition was never passed on to the king.

The Aborigines Progressive Association

The Aborigines Progressive Association (APA) was founded in 1937 by leaders of the Australian Workers Union (AWU) and the Shearer's Union. It was led by a mixture of strong Aboriginal leaders such as William Ferguson, Pearl Gibbs and Jack Patten, who published the first Aboriginal newspaper. Membership was well publicised and the APA made a significant contribution to Aboriginal rights, including successfully campaigning the NSW Government to inquire into the proceedings of its Aborigines Protection Board.

The 1938 Day of Mourning

The Day of Mourning was a protest organised by Patten and Ferguson from the NSW APA and Cooper, from the AAL of Victoria. Its underlying message was that for 150 years Aboriginal people had been denied basic human rights, enduring 'callous treatment'. Having **boycotted** previous Australia Day celebrations and found themselves ignored by media outlets



AUSTRALIAN ABORIGINES CONFERENCE

Sesqui-Centenary

DAY OF MOURNING & PROTEST

to be held in

THE AUSTRALIAN HALL, SYDNEY
(No. 148 Elizabeth Street)

on

WEDNESDAY, 26th JANUARY, 1938
(Australia Day)

from

10 a.m. to 5 p.m.

THE FOLLOWING RESOLUTION WILL BE MOVED:

"WE, representing THE ABORIGINES OF AUSTRALIA, assembled in Conference at the Australian Hall, Sydney, on the 26th day of January, 1938, this being the 150th Anniversary of the whitemen's seizure of our country, HEREBY MAKE PROTEST against the callous treatment of our people by the whitemen during the past 150 years, AND WE APPEAL to the Australian Nation of today to make new laws for the education and care of Aborigines, and we ask for a new policy which will raise our people to FULL CITIZEN STATUS and EQUALITY WITHIN THE COMMUNITY."

Aborigines and Persons of Aboriginal Blood only are invited to attend. Please come if you can!

Signed for and on behalf of
THE ABORIGINES PROGRESSIVE ASSOCIATION

J. T. Patten, President.
W. Ferguson, Organising Secretary

Address: c/o Box 1924 KK
General Post Office, Sydney

Stafford Printery, Levey Street, Chippendale.

Source 11.2.3 J.T. Patten and W. Ferguson, Aborigines Claim Citizen Rights! A Statement of the Case for Aborigines Progressive Association, 1938

and government officials, they believed that a more substantive and proactive event was required. The 1938 Australia Day sesquicentenary (150 years since white settlement in 1788) was chosen as a significant event to rally support and demand change.

The day included a march through the streets of Sydney, a meeting with the Prime Minister Joseph Lyons and a mass rally in Australian Hall. A resolution was moved that protested against the treatment of Aboriginal people and appealed for a new federal policy that included full citizen status and equality within the community.

Did you know?

In 1938, Aboriginal people were brought in to play their parts in the 150 years 'celebration' re-enactments of European settlement. They were threatened with the withholding of food supplies on the reserves if they did not participate.

The event was a significant statement to the white community of Australia and has continued as an annual event.

The Cummeragunja Walk-Off

Cummeragunja, on the NSW side of the Murray River, became famous for being the site of the first-ever mass strike of Aboriginal people in 1939, known as the Cummeragunja Walk-Off. Protesting cruel treatment and exploitation, over 150 residents walked off the Aboriginal Station and crossed over the border into Victoria, contravening the rules of the NSW Aborigines Protection Board.

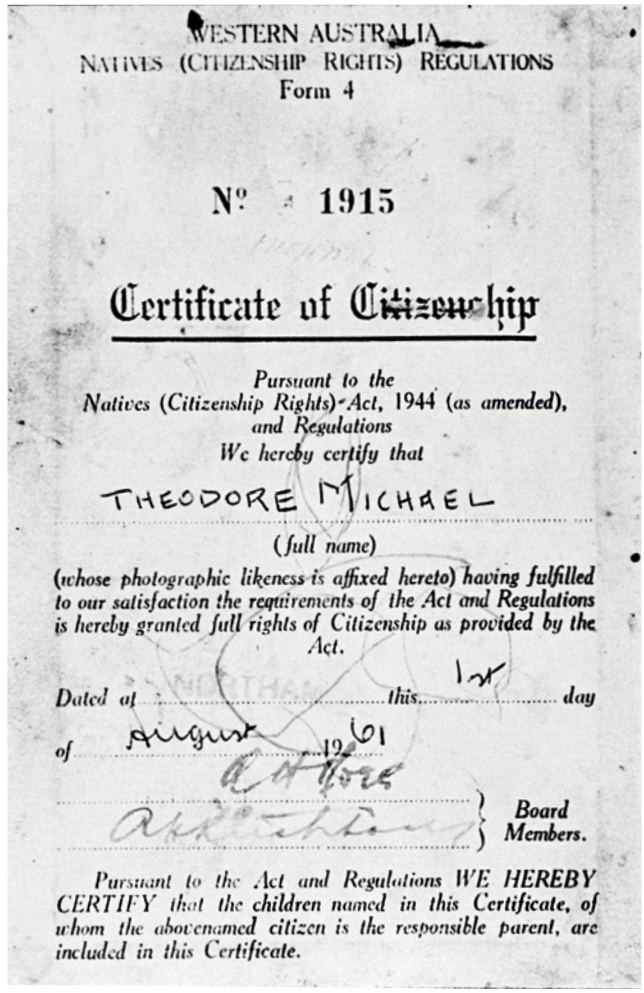
The significance of this protest lies in the display of strength and organisational skills of the Aboriginal people and their supporters. The Walk-Off frustrated and embarrassed officials, and was supported by the media who carried their stories and exposed the conditions Aboriginal people were being forced to live under. Most importantly, the Cummeragunja Walk-Off brought changes to the Aborigines Act of New South Wales.

The assimilation policy

The policy of protection was replaced by one of assimilation. By 1937, each state agreed to adopt the policy that required Aboriginal people to **assimilate** into the white community. This required Aboriginal and Torres Strait Islander people 'not of full blood' to give up their customs and way of life, and to adopt the culture and language of British Australians. This was expected even though Aboriginal people did not receive equal citizenship rights. While the policy was enacted from the 1930s, it was not formalised or fully defined until the 1960s.

The right to citizenship

Citizenship was a fundamental right denied to Indigenous people, which limited them to a life subservient to government policies and controls. In 1941–42, some gains were made with Commonwealth benefits of child, aged and invalid payments gradually extended to Aboriginal and Torres Strait Islander peoples.



WESTERN AUSTRALIA
NATIVES (CITIZENSHIP RIGHTS) REGULATIONS
Form 4

No. 1915

Certificate of Citizenship

Pursuant to the Natives (Citizenship Rights) Act, 1944 (as amended), and Regulations
We hereby certify that

THEODORE MICHAEL

(full name)

(whose photographic likeness is affixed hereto) having fulfilled to our satisfaction the requirements of the Act and Regulations is hereby granted full rights of Citizenship as provided by the Act.

Dated at ..... *this* 1st *day*
of August *19* 61

..... } *Board Members.*

Pursuant to the Act and Regulations WE HEREBY CERTIFY that the children named in this Certificate, of whom the abovenamed citizen is the responsible parent, are included in this Certificate.

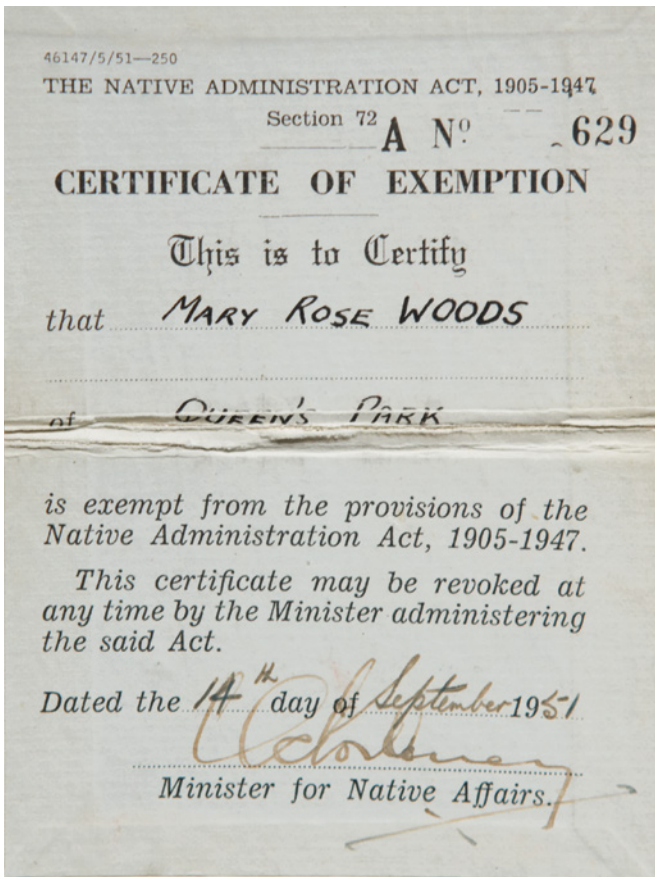
Source 11.2.4 Certificate of citizenship, issued on 1 August 1961 to a member of the Badjaling community in Western Australia, held at the State Library of Western Australia

Certificates of citizenship could be acquired by Indigenous people, but required the applicant to abandon their communities and kinship groups, and give up traditional cultural practices. They also required the applicant to keep their homes clean, abide by state laws and remain sober. Certificates could be revoked at any time. Many Aboriginal people believed the sacrifice involved in getting a certificate far outweighed the benefits.

Certificates of exemption

Aboriginal and Torres Strait Islander people could also apply to state governments for citizenship certificates, which provided exemption from state protection laws.

These laws, while varying from state to state, greatly restricted the freedoms of Aboriginal and Torres Strait Islander people. Exemption certificates allowed them the right to vote and attend school, but required them to promise to give up their traditional way of life, and not associate with other Indigenous people.



46147/5/51—250

THE NATIVE ADMINISTRATION ACT, 1905-1947

Section 72 A No. 629

CERTIFICATE OF EXEMPTION

This is to Certify

that MARY ROSE WOODS

of QUEEN'S PARK

is exempt from the provisions of the Native Administration Act, 1905-1947.

This certificate may be revoked at any time by the Minister administering the said Act.

Dated the 14th day of September 1951

Minister for Native Affairs.

Source 11.2.5 A certificate of exemption was given by the government to allow an Indigenous person citizenship rights they would not otherwise have.

The certificates were not easy to get and had to be carried on their person at all times and produced when requested. Governments also had the right to revoke the exemption certificates, which were often referred to by Indigenous people as 'dog tags' or 'dog licences', indicating how they felt about their treatment.

ACTIVITIES

Remembering and understanding

1 What was achieved by those who participated in the Cummeragunja Walk-Off?
2 What was the 1938 Day of Mourning and why was it significant?

Applying and analysing

3 Conduct further research online and compare 26 January 1938 in two paragraphs for an Indigenous person and a non-Indigenous person. Include reference to events and attitudes on the day.
4 Read the list of laws and conditions imposed upon Aboriginal and Torres Strait Islander peoples prior to 1965 (see page 248). In what ways and to what extent do you think these would impact on people's daily lives? Choose three of the laws and conditions and create a short presentation outlining the ways they would affect the Indigenous people they applied to.

Evaluating and creating

5 Was the granting of exemption certificates a true restoration of civil rights to Indigenous Australians? Why or why not? Write two or three paragraphs justifying your response.
6 Choose two different events or groups discussed in this unit and write a paragraph on each, explaining its significance in the struggle for rights and freedoms of Indigenous Australians.

UNIT 11.3

The Stolen Generations

The forcible removal of children

The term 'Stolen Generations' is used to describe the forced removal of over 100 000 Aboriginal and Torres Strait Islander children, who were taken from their families and placed into the care of government institutions, or adopted by non-Indigenous families, from the 1860s to the 1970s. Children of both Western and Aboriginal descent, commonly referred to using the derogatory term 'half-caste', were sent to missions or reserves to be taught European ways.

Justification for the removals

The removal of children was undertaken legally. State and territory governments had **protection policies** that gave them authority over the lives of Aboriginal people. These actions were justified as protecting the interests of the children. Children who were removed were not permitted to have contact with their biological parents and were forced to assimilate into Western culture. The practice was underpinned by the racist view that the children's Aboriginality would be 'bred out' of them.

A 'civilised' upbringing

To the people of Australia in the early part of the 20th century, it was believed that children of both Western and Aboriginal descent were removed from their Aboriginal communities because they were disadvantaged; they could now receive what was considered a better education, a civilised upbringing and be placed in a loving home or government institution.

In reality, it was much more complex than that. Reasons for removal are now considered to have been socially motivated, reflective of a young commonwealth nation that wished to control each element of society, including 'racial purity'. This reflected the Social Darwinist thinking of the day, where the belief that some groups had advantage over others due to biological superiority.

There was also much discussion regarding the 'dangers' of having too many 'half-castes' in society, as inter-breeding was believed to lead to downward evolution. Mixed races were considered to be inferior to both people of European decent and Indigenous Australians. **Paternalism**, the policy of controlling in a 'fatherly' way, was used also as a defence for the removals. Children who were removed were trained in skills so that they would be 'effective citizens', and taught work habits that would give them employment with colonial settlers. However, they were effectively used as free or cheap labour, the boys often as farm hands and the girls as domestic servants.

Discovery and debate about the truth

In 1981, historian Peter Read shocked the Australian public with the release of a pamphlet entitled *The Stolen Generations: The Removal of Aboriginal Children in New South Wales 1883 to 1969*. It was the first time the term 'Stolen Generations' had been used and his research was very much advocative in style. In other words, Read believed that something had to be done about setting right the wrongs of the past.

The pamphlet accused Australian governments of attempting **genocide**; that is, attempting to wipe out the Aboriginal people of Australia. This accusation was also made against the Commonwealth Government by the Human Rights and Equal Opportunity Commission in 1997, after the release of its report ***Bringing Them Home***. While some historians have continued to argue against this premise, steps have been taken by governments towards **Reconciliation**, a topic discussed later in this chapter.

Homes Are Sought For These Children

A GROUP OF TINY HALF-CASTE AND QUADROON CHILDREN at the Darwin half-caste home. The Minister for the Interior (Mr Perkins) recently appealed to charitable organisations in Melbourne and Sydney to find homes for the children and rescue them from becoming outcasts.

I like the little girl in centre of group, but if taken by anyone else, any of the others would do, as long as they are strong

Source 11.3.1 Newspaper clipping from a Darwin newspaper c. 1930. The handwritten text states, 'I like the little girl in the centre of group, but if taken by anyone else, any of the others would do, as long as they are strong'.

Whether the superintendents were good or bad, nothing could change the sterility of the environment. The children were emotionally, spiritually, intellectually and psychologically deprived, and scars might never heal.

In a mid-western town I met an ex-Kinchela man. When he was ten he had been taken straight from school by a welfare officer, he said, and was never able to say goodbye to his father. He was placed in Kinchela and was an inmate during the period described above. He could not, or would not, talk of his experiences there. He was divorced, had been an alcoholic, and was deeply unhappy ...

As the children approached the age of fourteen or fifteen the question arose of their employment. The girls at Cootamundra were better prepared for the work—described by one of them as 'slavery'—for their training in the home coincided exactly with what was needed to be done anyway. It consisted of the scrubbing, washing, ironing and sewing which the Board did not want to pay anyone to do. The same argument did not apply so well to the boys, but they still had to perform scrubbing and kitchen duties anyway, or else they worked in the vegetable gardens or dairy. In choosing a position, the Board assumed that basically blacks were stupid. Its very first Report in 1883 stated that black children after training would 'take their places with the industrial classes of the colony'. In 1938, fifty years later, it was the same: boys would become 'rural workers and most of the girls domestic workers'.

Source 11.3.2 A description of the impact on everyday life of the removal of Aboriginal children in New South Wales, from Peter Read, *The Stolen Generations*, 1981

Source 11.3.3 Students standing with their teacher at Hermannsburg Mission, Northern Territory, c. 1920

Source 11.3.4 Aboriginal children eating at Yuendumu Native Settlement, Northern Territory, 1958

Between morning school and the lunch break, we heard the unmistakeable sound of a motorcar. Out where we were motor cars were very rare at that time, and although we were seething with curiosity we did not dare move from our desks … I cannot remember everything that went on, but the next thing I do remember was that the policeman and Mr Hill came into the school. Mrs Hill seemed to be in a heated argument with her husband. She was very distressed.

The children were all standing (we always stood up when visitors came and the police were no exception). My sister May and another little girl, an orphan, started to cry. Then others. They may have heard the conversation. I was puzzled to know what they were crying for, until Mr Hill told all the children to leave the school, except myself and May and Myrtle Taylor, who was the same age as May (eleven years). Myrtle was an orphan reared by Mrs Maggie Briggs. She was very fair-skinned and pretty.

I had forgotten about Brungle and the gang of men representing the Aborigines Protection Board who had visited when we were staying there. But then it came to me in a rush! But I didn't believe for a moment that my mother would let us go. She would put a stop to it! All the children who had been dismissed must have run home and told their parents what was happening at school. When I looked out that schoolroom door, every Moonahcullah Aboriginal mother—some with babies in arms—and a sprinkling of elderly men were standing in groups. Most of the younger men were away working on homesteads and sheep stations or farms. Then I started to cry …

Source 11.3.5 Story of Margaret Tucker's (original name Margaret Clements) removal in 1917 when she was 13, and her sister May was 11, Moonahcullah, New South Wales

ACTIVITIES

Remembering and understanding

1 What term is used to describe the forcible removal of part-Aboriginal children?
2 How were the removals justified at the time?
3 What happened to the children of both Western and Aboriginal descent once they were taken from their families?

Applying and analysing

4 Examine Source 11.3.1.
   - **a** What is your initial impression of this picture?
   - **b** What does the typed text beneath the photograph imply about the children's situation?
   - **c** The source has handwriting scribbled under the photograph. What does it imply about attitudes towards Aboriginal children?

5 Examine Sources 11.3.3 and 11.3.4.
   - **a** Who do you think would have taken each photograph?
   - **b** Describe what you think is happening in each scene.

6 Read Source 11.3.5.
   - **a** How would you describe the removal of children from the school?
   - **b** How do you think Australians might have reacted when reading this story for the first time in the 1980s? Would everyone have responded in the same way? Why?

7 **a** What do you think is the purpose of each source?
   - **b** How might the purpose (motivation) of each author affect the reliability and usefulness of each source in a study of the Stolen Generations?

Creating and evaluating

8 Conduct further research online on the Yuendumu Native Settlement. Try to find some contemporary media commentary on such settlements. Using your research and information from the sources in this unit, imagine you are a reporter visiting Yuendumu at the time Source 11.3.4 was taken and write an editorial article to accompany the image.

UNIT 11.4

US Civil Rights movement

Aims and methods of the movement

The late 1950s and 1960s was a period of great division in the United States over the struggle by African Americans to remove the laws and attitudes that racially discriminated against them and segregated them from society. Activist groups demanded an end to racial inequality and aimed to gain equal access to education, political and legal processes, and economic opportunity. Their methods of achieving these goals included legal means, negotiations, petitions, boycotts, non-violent protests and demonstrations. It was the largest social movement of the 20th century and inspired similar actions across the world, including Australia, where similar issues of racial inequality existed.

The Jim Crow laws

Despite the 1776 American Declaration of Independence stating that 'all men are created equal', racial inequality existed in extreme forms across the United States. Anti-African-American legislation known as the 'Jim Crow' laws were implemented in various southern states after the American Civil War, enforcing segregation, the practice of separating people of different races, between white Americans and African Americans. This included attendance at public schools, theatres, hotels, restaurants, transport and even water fountains. In some states it extended to banning white Americans and African Americans from getting married. Abolition of the Jim Crow laws was the underlying motivation of the US Civil Rights movement.

It shall be unlawful for a negro and white person to play together or in company with each other in any game of cards or dice, dominoes or checkers.

Birmingham, Alabama, 1930

Marriages are void when one party is a white person and the other is possessed of one-eighth or more negro, Japanese, or Chinese blood.

Nebraska, 1911

Separate free schools shall be established for the education of children of African descent; and it shall be unlawful for any colored child to attend any white school, or any white child to attend a colored school.

Missouri, 1929

Source 11.4.1 Jim Crow laws implemented in the southern states of the United States

Source 11.4.2 Elizabeth Eckford entering Little Rock Central High School, September 1957

Did you know?

It is thought that the Jim Crow laws were named after a white man who performed with his face painted black, imitating and mocking the way African Americans sang and danced.

Segregation in schools

Even though segregation in state schools was deemed to be illegal by 1954, some southern states refused to desegregate their schools. Perhaps the most famous example of this is the incident now referred to as the Little Rock Crisis. In 1957, when a group of African-American students arrived to attend school, angry mobs gathered outside the school doors to protest. The Governor of Arkansas illegally used state troopers to block the African-American students from entering. The situation escalated and was finally resolved when President Eisenhower ordered federal troops to protect the students' entry.

1863 Emancipation Proclamation frees slaves in the US

1896 Jim Crow laws '—separate but equal'

1909 National Association for the Advancement of Colored People (NAACP) founded by Mary Ovington

1954 Landmark decision in the US Supreme Court in *Brown v. Board of Education* states that the segregation of black students from white students is unconstitutional

1955 Rosa Parks refuses to give up her seat on a bus to a white man

1956 Supreme court intervenes and rules that segregation on buses is unconstitutional

1957 Little Rock High School clash
Martin Luther King founds the Southern Christian Leadership Conference (SCLC)

1960–63 Sit-ins commence across southern US states

1961 Freedom Rides in southern states commence

1963 Birmingham Campaign organised by SCLC

1964 Riots in Harlem (New York), Philadelphia, Chicago and Rochester
Civil Rights Act passed through congress banning segregation in public spaces

1965 Los Angeles riots—34 people killed

1967 State laws forbidding interracial marriage declared unconstitutional

1968 April 4—Martin Luther King Jr assassinated
President Johnson signs the anti-riot act

Source 11.4.3 Important dates in the US Civil Rights movement

Bus boycotts

Despite a Supreme Court ruling in 1954 stating that segregation on interstate buses was unconstitutional, southern states continued with their own policy of transport segregation. This usually involved white Americans sitting at the front and African Americans sitting towards the back of the bus. They also had to give up their seat if a white person wanted it. On 1 December 1955, an African-American seamstress named Rosa Parks quietly refused to give up her seat to a white person and was arrested.

The National Association for the Advancement of Colored People (NAACP) paid her bail and organised a boycott of all buses in Montgomery, Alabama. African Americans made up 75 per cent of bus passengers and their boycott dealt the bus companies a serious economic blow. The boycott continued for more than a year, challenging prevailing laws and attitudes in southern states.

Martin Luther King Jr

Martin Luther King Jr was an African-American preacher at a southern Baptist church in Montgomery, Alabama. He is the most famous leader of the US Civil Rights movement and is remembered for his courage and leadership in the face of racial violence and hatred. Heavily influenced by the Indian independence leader Mahatma Gandhi, who used methods of passive resistance (non-violence) in his protest for India's independence from Britain, King recognised that

Source 11.4.4 Martin Luther King Jr addresses a crowd of angry African-American supporters willing to avenge the attack on his home.

great change could be achieved peacefully. King was instrumental in the Montgomery Bus Boycotts, where his non-violent approach was utilised.

King inspired a generation of young people of all races to protest non-violently against racial discrimination. He led a protest rally to Washington in 1963 where he delivered his 'I have a Dream' speech—one of the most famous speeches in history—to over 200 000 supporters. In 1964, he became the youngest person to be awarded the Nobel Peace Prize at aged 35. After receiving numerous death threats and surviving the bombing of his home in 1956, King was assassinated prior to delivering a speech on 4 April 1968, while standing on the balcony of a hotel room in Tennessee.

The Freedom Rides

In an attempt to challenge transport segregation in the southern states, a group called the Congress of Racial Equality (CORE) rode interstate buses in the most segregated states of Mississippi and Alabama. The Freedom Rides as they were known, included about 1000 black and white activists, who faced considerable hostility and danger as they attempted to draw attention to the unfairness of segregation. In May 1961, their bus was attacked by angry protestors and members of the **Ku Klux Klan** in Birmingham, Alabama. The police failed to protect the protestors as they were beaten and their bus fire-bombed. The US Government was forced to order federal marshals to accompany the Freedom Riders.

Source 11.4.5 Sit-in protesters against segregation at a lunch counter in Jackson, Mississippi, have drinks tipped over them, 28 May 1963.

Source 11.4.6 A 'Freedom Bus' is fire-bombed while travelling in the southern states, 14 May 1961.

Continued protests and activism

Emergence of television

In the 1960s, television footage became an important method of portraying images of civil injustice. Viewers were horrified at the level of violence and hostility shown by authorities towards non-violent protestors. The Birmingham campaign organised by the Southern Christian Leadership Conference in the spring of 1963 was widely publicised, and showed high-pressure water hoses and police dogs used on protestors, including over 1000 children, involved in a civil rights march. As a result, President Kennedy was forced to take action, and brought a Civil Rights Bill before the US Congress, which sought to bring in legislation outlawing racial discrimination.

Protest marches

Protest marches had a significant impact because of the number of protestors who participated. The Washington March in 1963 to the Lincoln Memorial was important due to the fact that a third of the 200 000 protestors were white. Its aim was to put pressure on Congress to pass President Kennedy's Civil Rights Bill and demonstrated considerable support for and advancement of the Civil Rights movement.

Civil Rights Act 1964

Before Congress could pass the Civil Rights Bill, President Kennedy was assassinated in Dallas, Texas, on 22 November 1963. The new President, Lyndon Johnson, pushed on with the landmark Bill and the Civil Rights Act was passed in 1964. The Act banned segregation in all public spaces, prevented any company without a pro-civil rights charter from applying for federal funding and enabled the Attorney-General to file a law suit against states that would not comply with the new legislation.

Voting Rights Act 1965

The Voting Rights Act made actions to interfere with or prevent African Americans from registering to vote illegal. President Johnson introduced the Bill as a result of highly publicised clashes between protest marchers and police in southern states. Concerned that African Americans were being intimidated and prevented from voting, Martin Luther King had organised a march in Alabama from Selma to Montgomery. The marchers were stopped twice by state police, who arrested protestors for holding an 'illegal parade' and imprisoned hundreds of supporters. Eventually, the National Guard was ordered by the President to accompany the marchers for the third stage. The original protest group of 300 was joined by 25 000 people as public opinion grew in support of King and the government's actions to support change.

Black Power

While the issues of desegregation and voting rights were priorities for African Americans in the southern states, those in the north sought to address poverty, unemployment and discrimination by the police. As a result, their methods differed markedly from those adopted in the south. Younger, urban African-American leaders were also more impatient for change.

- The Student Nonviolent Coordinating Committee (SNCC) broke away from Martin Luther King and renamed themselves Black Power. They expelled their white supporters and argued for a form of Black Nationalism, which involved separatism and self-determination while fighting to take control over issues that affected their communities.
- The Black Panthers adopted a militaristic style, wearing uniforms and carrying guns. They frequently clashed with police but also organised free community programs that assisted black children and families living in poverty. Their message to white police was that they could not be easily intimidated. For African Americans, they provided a forceful alternative to King's philosophy of passive resistance.
- The Nation of Islam rejected the concept of integration and believed that African Americans had the right to defend themselves against white violence. Their leading spokesman, Malcolm X, famously declared that African Americans should use 'any means necessary' to defend themselves, their family and their property. After modifying his views in 1965, Malcolm X was murdered by members of the Nation of Islam.

Source 11.4.7 A 17-year-old student is attacked by a police dog during a mass protest in Birmingham, Alabama, May 1963. This photo appeared on the front page of *The New York Times* and was discussed by President Kennedy during a meeting at the White House.

ACTIVITIES

Remembering and understanding

1. List the ways in which African Americans were discriminated against.
2. Examine the people in Source 11.4.2. What type of emotions do you think they are feeling? Why might they feel this way?
3. Who were the Freedom Riders and what did they achieve?
4. Using the text and Source 11.4.4, discuss who inspired Martin Luther King Jr and what impact he had on the course of the Civil Rights movement?

Applying and analysing

5. Draw up the table as shown below. Using the information on this spread, compare and contrast the aims and methods of African-American civil rights protesters in the north and the south.

	Aims	Methods
Northern protesters		
Southern protesters		

Creating and evaluating

6. Examine the sources and the text and in a 250-word report evaluate the significance and achievements of Martin Luther King Jr. In your report, include significant events and people relevant to King's contribution.

UNIT 11.5

The Australian Freedom Rides

The Civil Rights movement

The 1960s reflected a time of civil rights activism in many Western countries, as new movements for social and cultural change emerged in response to community injustices. The US Civil Rights movement's push for greater equality and rights for African Americans was highly publicised. Newspaper and television images of mass rallies were viewed across the world, revealing the division and violence associated with racial hatred, segregation and widespread injustice. Australians too witnessed the strategies and gradual successes of civil rights activists in the United States, inspiring campaigners to push for greater rights and freedoms for Indigenous Australians.

Australia inspired by the United States

The media coverage of events and issues in the United States had a significant effect on Australia's anti-discrimination movement. On 6 May 1964, a group of university students protested against the discrimination of African Americans by staging a mock meeting of the Ku Klux Klan outside the American Consulate in Sydney, during which they burned crosses. The same group later turned its attention to Australian civil rights issues. Calling itself Student Action for Aborigines (SAFA), the student group elected Aboriginal student Charles Perkins as their president.

The SAFA designed a campaign to expose the poverty and racial discrimination of Aboriginal people in NSW regional towns. Like the American Freedom Rides from whom they drew their inspiration, the SAFA aimed to attract media attention and, in doing so, make it a matter of urgent political action, forcing the federal government to develop a national strategy.

Aims and principles

On 18 January 1965, in a letter to the Chairman of the NSW Aborigines Welfare Board, Perkins outlined the principles, aims and methods of SAFA. These included:

- chartering a bus for two weeks around the west and north coast of New South Wales
- developing a comprehensive survey of Aboriginal living conditions in the main towns visited in terms of housing, education, employment, health, and attitudes between European and Aboriginal people
- referring to the tactics demonstrated by Martin Luther King Jr of passive, non-violent action

Source 11.5.1 Students from the University of Sydney preparing to visit towns in New South Wales on their Freedom Rides, 1965

- inspiring both Aboriginal and European townspeople to do something practical about Aboriginal discrimination
- ensuring the integration of community facilities that were segregated, such as theatres, swimming pools, clubs and hotels.

Australian Freedom Rides

On the 12 February 1965, Australia's own Freedom Rides commenced with 33 students on a two-week bus journey. The group included Darce Cassidy, Australian Broadcasting Commission (ABC) reporter, who provided national and international media coverage for both radio and television broadcasters. This attracted extraordinary publicity to an issue that was rarely considered by people in urban areas.

Throughout their journey the students visited seven rural towns, where they conducted surveys and challenged local community attitudes towards Aboriginal people. They picketed Walgett RSL Club, which did not allow membership for Aboriginal ex-servicemen, and protested outside the Moree swimming pool, which allowed Aboriginal children in only at certain hours and after they had showered. The Freedom Riders, with parental permission, transported Aboriginal children from the nearest reserve by bus to the local pool, and refused to leave until the pool had allowed the children entry. Only after the intervention of the town's mayor were children allowed to go into the pool.

Source 11.5.2 A cartoonist's comments on the Freedom Rides, Melbourne *Herald*, 20 February 1965

> ***Sydney university students involved in racial violence at Moree, northern NSW, on Saturday, were left stranded yesterday when their hired bus driver walked out because he said their anti-segregation tour was too dangerous ...***
>
> ***Mr Charles Perkins, the students' leader said: 'We do not blame Mr Packenham ... He has been intimidated into leaving for fear of danger to the bus and to himself'.***

Source 11.5.3 From 'Race tour bus driver walks out', *The Australian*, 22 February 1965

Impact of the Freedom Rides

The entire journey of the Freedom Riders and community reactions were publicised nationally. This raised awareness of the deep-seated racism in rural Australia. It provided the wider public with reason to support the Aboriginal rights movement to bring about an end to inequality and mistreatment.

The Freedom Rides also had an impact on Aboriginal and Torres Strait Islander people by showing that change was possible and that they did not have to put up with discrimination. Perkins and his group had provided significant media attention to the issue and placed Indigenous rights firmly on the political agenda. It also inspired a younger generation of Indigenous Australians to fight for greater rights and freedoms.

ACTIVITIES

Remembering and understanding

1 What was the SAFA and what issues was it concerned with?
2 What conditions had been imposed on Aboriginal children at the Moree swimming pool?

Applying and analysing

3 Create a timeline for Australia's Freedom Rides, including significant destinations and events from the trip.

Creating and evaluating

4 Create a short oral presentation outlining the aims and evaluating the impacts the Australian Freedom Riders had regarding the rights of Aboriginal and Torres Strait Islander peoples.

UNIT 11.6

The path to the 1967 referendum

Rights and voting

In January 1901, the Australian Constitution came into existence. It spelled out the authority for all powers, by which laws are made (legislators), how they are implemented (executive government) and how they are upheld (the courts). Central to the document's purpose are the roles and responsibilities of governments and the voting rights of citizens in federal elections and referendums.

Before 1967, the Australian Constitution did not provide the federal government with the power to deal with Aboriginal and Torres Strait Islander peoples. Each state was responsible for Aboriginal affairs. This meant that the rights and experiences of Indigenous people differed significantly from state to state. States governed on matters such as wages, work and marriage.

This was most evident when, in 1962, the federal government amended the electoral voting conditions to allow Aboriginal people the right to vote in federal elections. This was only made available to Aboriginal people who already had the right to vote in state elections, and enrolments were not made compulsory. The only way all Aboriginal people in every state could obtain the right to vote at both a state and federal level was through an amendment to the constitution. Such an amendment is only possible through a referendum, in which people are asked to vote either 'yes' or 'no' to a proposed change.

Did you know?

Indigenous Australian David Unaipon (1872–1967) has been pictured on the $50 note since 1995. Although he left school at age 13, he revolutionised sheep shearing and conceptualised the helicopter two decades before it became a reality. He regularly appeared in newspaper articles that, while heralding his discoveries, were extremely racist in their remarks. Also a writer, he actively campaigned from the 1920s for Indigenous rights.

Census figures

Another limitation of the Constitution was that the national census did not include the counting of Aboriginal and Torres Strait Islander peoples. Central to a government's ability to make positive change is an accurate knowledge of their country and population. Not having reliable figures to work with prevented the federal government from introducing laws that would improve conditions for Indigenous Australians.

> ***No adult person who has or acquires a right to vote at elections for the more numerous House of the Parliament of a State shall, while the right continues, be prevented by any law of the Commonwealth from voting at elections for either House of the Parliament of the Commonwealth.***

Source 11.6.1 Section 41 of the Australian Constitution, 1901

> ***In reckoning the numbers of people of the Commonwealth, or of a State or other part of the Commonwealth, aboriginal natives shall not be counted.***

Source 11.6.2 Section 127 of the Australian Constitution, 1901

Campaign for constitutional change

The campaign for constitutional change had persisted since the 1920s, despite constant setbacks. In 1929, Archdeacon Lefroy in London argued that Australia owed a 'debt of reparation' and should take national responsibility for the rights of its Indigenous people. William Cooper, during the 1938 Day of Mourning, called for greater federal powers to legislate for Indigenous Australians.

A petition to change the Constitution

In 1962, the Federal Council for the Advancement of Aborigines and Torres Strait Islanders (FCAATSI) presented a petition to the federal government demanding change to the Constitution. While the campaign was not successful in achieving immediate change, it continued the pressure being applied to the federal government and highlighted significant inconsistencies between the states in relation to Aboriginal rights and freedoms.

Public awareness and international covenants

Following the 1962 campaign, public awareness was again heightened by the 1965 NSW Freedom Rides and the 1966 Wave Hill strike. The strike occurred when 200 Aboriginal stockmen, house servants and their families, led by Vincent Lingiari, walked off Wave Hill Station in protest against receiving lower pay than non-Aboriginal employees and their working conditions. Continued international coverage of the US Civil Rights movement and criticism of the South African apartheid system, also stirred a global voice for change.

In 1966, the UN published the *International Covenant on Civil and Political Rights* and the *International Covenant on Economic, Social and Cultural Rights*. As a signatory of this covenant, Australia's new Prime Minister Harold Holt had little option but to agree to hold a referendum to change the Constitution.

The 1967 Referendum

The 1967 Referendum was an important step towards equality for Aboriginal and Torres Strait Islander peoples. In order to change the Constitution, both Houses of Parliament have to agree to the change, and all Australian citizens had to vote on the amendment through a referendum, with a majority of people in a majority of states voting 'yes'.

A vigorous campaign was held to promote the 'yes' campaign, with strong support by the churches, the trade union movement and the media. Led by FCAATSI, the 'yes' campaign program included street parades, public meetings and rallies, posters and music.

Source 11.6.3 Aboriginal children in a protest rally campaigning for a 'yes' vote, Queensland, 1967

Two Referendums are being held on the same day on two separate proposed laws for the alteration of the Constitution.

At the Referendums each voter should indicate separately his vote in relation to EACH proposed law as follows:

If HE APPROVES the proposed law—by writing the word **YES** in the space provided on the ballot-paper opposite the question; or

If HE DOES NOT APPROVE the proposed law—by writing the word **NO** in the space provided on the ballot-paper opposite the question.

The two questions will be set out on the ballot-paper thus:

DO YOU APPROVE the proposed law for the alteration of the Constitution entitled—

" An Act to alter the Constitution so that the Number of Members of the House of Representatives may be increased without necessarily increasing the Number of Senators " ?

DO YOU APPROVE the proposed law for the alteration of the Constitution entitled—

" An Act to alter the Constitution so as to omit certain words relating to the People of the Aboriginal Race in any State and so that Aboriginals are to be counted in reckoning the Population " ?

YOU MUST VOTE IN RESPECT OF EACH PROPOSED LAW

VOTING IS COMPULSORY

By Authority: A. J. Arthur, Commonwealth Government Printer, Canberra

Source 11.6.4 Extract from the 1967 information booklet outlining the proposed changes to the Constitution and presenting a sample referendum ballot paper

Voting in the referendum

On 27 May 1967, Australians were asked to vote on two questions. Question 1 related to Section 127 of the Constitution and asked people whether Aboriginal people should be counted in the national census. Question 2 addressed Section 51 and asked people whether the federal government should have the power to make laws regarding Aboriginal people.

The outcome of the Referendum

The outcome of the Referendum was a 90.77 per cent vote in favour of the changes. The result reflected overwhelming support for the rights of Indigenous Australians, and granted the federal government the opportunity to make positive changes. The Referendum is sometimes confused with the moment Aboriginal people gained citizenship; however, citizenship had already been gained by 1961 and the right to vote granted in 1962.

The Referendum did not, in fact, provide any direct new rights for Aboriginal and Torres Strait Islander peoples. However, it was a very significant symbolic victory that saw the establishment of an Aboriginal Affairs Department in 1968, with new powers to oversee the interests of Indigenous Australians. Most importantly, it showed that ordinary people in 'white' society overwhelmingly supported positive change for Aboriginal and Torres Strait Islander peoples.

1967 Referendum				
State	Yes		No	
	Votes	%	Votes	%
New South Wales	1 949 036	91.46	182 010	8.45
Victoria	1 525 026	94.68	85 611	5.32
Queensland	748 612	89.21	90 587	10.79
South Australia	473 440	86.26	75 383	12.74
Western Australia	319 823	80.95	75 282	19.05
Tasmania	167 176	90.21	18 134	9.79
Total	**5 183 113**	**90.77**	**527 007**	**9.23**

Source 11.6.5 Results of the 1967 Referendum

ACTIVITIES

Remembering and understanding

1 What is the basic purpose of the Australian Constitution?
2 Was the 1962 campaign to change the Constitution successful?
3 What was the purpose of the 1967 Referendum?

Applying and analysing

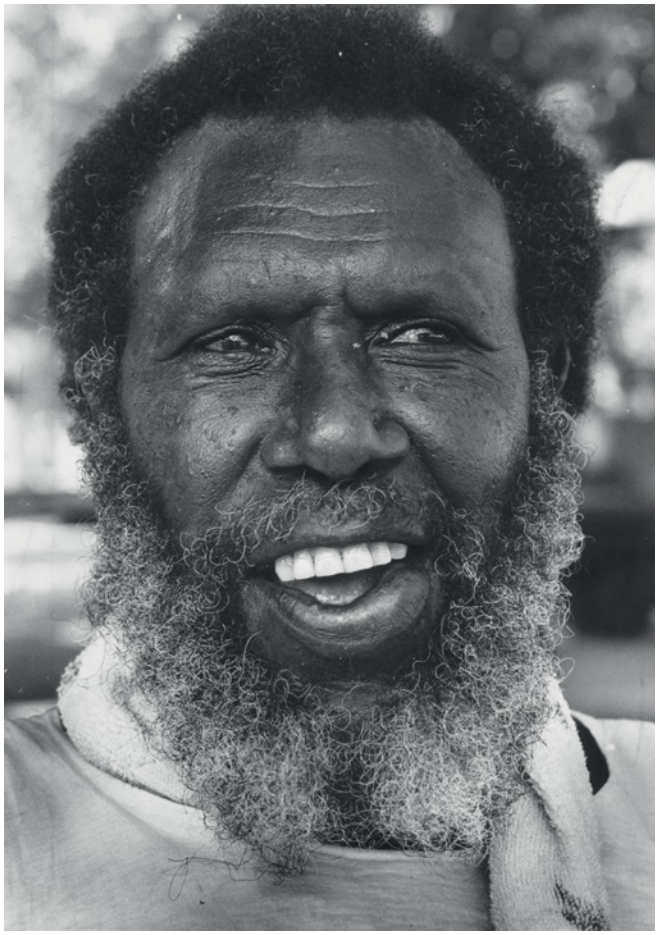
4 In small groups of two or three, brainstorm the reasons people may have had for voting 'yes' or 'no' to the Referendum. Create a table with your results.
5 Imagine it is 1967. Prepare a poster aimed at influencing opinion on the Referendum.

Creating and evaluating

6 Write a paragraph outlining the events and pressures that led to the Referendum.

UNIT 11.7

The Mabo decision



Source 11.7.1 Indigenous rights activist Eddie Mabo

A significant individual in the struggle for Indigenous rights

Eddie Koiki Mabo was born in 1937 on Mer Island (Murray Island) in the Torres Strait. His mother died during childbirth and Mabo was raised by his uncle, Benny Mabo and his family. During Mabo's teenage years the Queensland Government strictly regulated the Torres Strait Islands. The Meriam people lived a traditional lifestyle, seeking to maintain their cultural heritage by working the land, fishing and adhering to their cultural laws of inheritance. At the age of 16, Mabo broke a customary island law and was exiled to the mainland where he worked odd jobs, including pearl diving and sugar cane cutting.

In 1959, aged 23, Mabo married Bonita Neehow and they had 10 children. He worked to make a difference to the lives of Indigenous people and became a spokesperson for railway workers and the union and opened the first 'Aboriginal only' school in Townsville. At the age of 31, he became a gardener at James Cook University and, although never enrolled as a student, attended lectures and read widely. This would be a significant time in Mabo's life as he was exposed to intellectual discussion on the issue of Aboriginal rights and 'white' law. It also enabled important conversations with historians Professor Noel Loos and Henry Reynolds in 1974, in which Mabo discovered he did not own his land on Mer Island (see Source 11.7.2). This would be a significant turning point in Mabo's life and the beginning of a long journey in challenging the Queensland Government in the 'white' court system.

> ***We were having lunch one day in Reynolds' office when Koiki was just speaking about his land back on Murray Island. Henry and I realised that in his mind he thought he owned that land, so we sort of glanced at each other, and then had the difficult responsibility of telling him that he didn't, and that it was Crown land. Koiki was surprised, shocked and ... he said and I remember him saying 'No way, it's not theirs, it's ours.'***

Source 11.7.2 Professor Noel Loos recalls Eddie Mabo's discussion with him and Henry Reynolds in 1974. Koiki was Mabo's middle name.

Working towards native title

In 1981, Mabo attended a Lands Rights Conference in Townsville, where he delivered a seminar on his understanding of Torres Strait land ownership (see Source 11.7.3). He explained that a system of land ownership existed on Mer that predated white settlement. This traditional system of land ownership meant that male descendants on the island inherited the land of their father.

A lawyer listening to Mabo speak suggested that he take his argument to court as a test case to claim land rights. Firstly, the Queensland Government was challenged and legislated that the establishment of the colony in Queensland in 1859 nullified all previous traditional law and claims to land. Following this, the case was brought to the High Court of Australia in 1982.

Mabo's claim was dismissed on the ruling that he was not actually the son of Benny Mabo. Despite the disappointment Mabo chose to stand aside so that the entire case would not be dismissed and could continue with the other plaintiffs. In January 1992, 10 years after the start of the court case, Mabo died of cancer, aged 56.

In the Torres Strait, land ownership is the same throughout. It is different from Aboriginal land ownership on the mainland. Although we have tribal regions, we go much further into the clan area and then to individual or family holdings. This system existed as long as we could remember. When the first white men arrived in our islands they found people as village dwellers who lived in permanent houses and in well-kept villages. They also discovered that we were expert gardeners and hunters.

Source 11.7.3 From 'Land rights in the Torres Strait', a seminar delivered by Eddie Mabo in Townsville, 28–30 August 1981

The Mabo Judgment

On 3 June 1992, five months after Mabo's death, the High Court handed down its ruling. In it the judges of the High Court recognised the Meriam people as having a native title and entitled to possess and occupy, use and enjoy the Mer Islands. It was a landmark case and highly significant as it overturned the legal premise that Australia was **terra nullius**. This was the principle by which the British had claimed land ownership at the time of white settlement in 1788. It was the view that Australia was 'nobody's land' as no formal system of land ownership existed at the time of settlement.

Main principles of the Mabo Judgment

1. While the British Government acquired sovereignty of the continent, it did not acquire full ownership of all of the land.
2. Where it is determined that native title still exists then Indigenous people are entitled to continue their traditional laws and customs. This may include hunting, fishing or holding ceremonies.
3. If a language group loses connection to their land or cannot prove a connection that predates white settlement, then native title is extinguished.
4. Native title can be handed over to the Crown but the rights and privileges of native title are non-transferable.

Australian Human Rights Medal

While Eddie Mabo did not live to see the High Court's decision, his contribution to Australian Indigenous people was profound. In 1992, he was posthumously awarded the Australian Human Rights Medal by the Human Rights and Equal Opportunity Commission. Despite the dedication and courage he showed in his fight for Indigenous rights, he was not appreciated by everyone. Three years after his death, a memorial tombstone was erected in Townsville. The next day it was vandalised and partially destroyed. Mabo was later reburied on Mer Island in a secret place and with a traditional burial service, the first of its kind to be performed in over 80 years.

Native Title Act 1993

After the High Court ruling, which soon became known as the Mabo Judgment, the Keating Government realised that it had to legislate to recognise native title. In 1993, the Native Title Act (Commonwealth) provided a legal means and administration process by which Aboriginal communities could claim native title, or ownership of vacant Crown land. This was land owned by the federal government that was not being leased to miners or **pastoralists**.

The term 'native title' refers to the legal recognition in Australian law that some Indigenous people still hold rights to their land. The *Native Title Act 1993* stated that an Indigenous community could have exclusive rights over a section of land if it could prove that it had an ongoing connection to that land which predated white settlement. This only applied to Crown land, or land owned by the federal government. Aboriginal people had to prove continual occupancy of the land and its use for traditional reasons. More often, there were arrangements for partial access to land to practise customs and laws where an Aboriginal community had native title over a land that a farmer also had a lease over.

The Wik decision

It was not until the Wik decision in 1996 that the High Court formalised the shared relationship between leases and native title (see Source 11.7.4). In the decision, the Wik people were given access to their traditional lands, which were currently under lease to a pastoralist and mining companies. The Wik decision stated that where native title could be proven on leased Crown land, the pastoralist or miner to whom it was being leased did not have exclusive rights to the land. Instead they had to allow its first owners access in order to practise their traditional customs and laws.

Reaction to the Wik decision

The Wik decision caused outrage as many within the media mistakenly believed that Indigenous Australians now had the legal ability to claim people's backyards. This was never a provision of the Native Title Act and private land was not at issue in the Wik case. This fear was, however, seized upon by sections of the media and supporters of farming and mining interests (see Sources 11.7.5 and 11.7.6).

We don't want to keep people off our land. We want to share. We don't want to drive the pastoralists away. They are not our enemies. We helped to build that industry and we need it to be strong for our future too. We just asked the Court to find that we can live alongside pastoral leases on Cape York.

We want the government to recognise that we are the traditional owners of those lands. Our law is first law ...

Source 11.7.4 'What the Wik Decision means to us', Denny Bowenda in *Native Title*, 1998

Source 11.7.5 The Liberal Party's Peter Reith is depicted loading bags of Mabo hysteria into an aerial crop-seeding plane, 1993.

... our [National Farmers' Federation] primary concern has always been certainty for the people who use the land for economic benefit—our farmers—and that means that they simply must have the exclusive occupancy of their land. We've demanded that the Government legislate to overturn the Wik decision, because the concept of coexisting title is simply unworkable ...

... since the Wik decision, many farmers around the country can't [plan for and invest in the future of their farms] because their future ability to manage their [farms] is clouded ...

50 per cent of Victoria is now under native title claim ...

Australia's farmers understand that they are deeply involved in a crucial chapter in our country's history, and they feel a strong obligation to make sure that their decisions are in the best interests of all Australians, wherever they live.

Source 11.7.6 From 'To conserve or farm', by Donald McGauchie, *The Age*, 22 July 1997. McGauchie was president of the National Farmers' Federation.

The Howard Government's 10-point plan

In May 1997, responding to concerns by pastoralists and miners in the wake of the Wik decision, the Howard Government released its 10-point plan. The following year it also introduced amendments to the Native Title Act. The Howard Government sought to further legislate the manner in which native title could be claimed, seeking to assure mining companies and industries concerned about losing control over the land they leased. In many cases, these leases extended for periods of up to 99 years.

The Bill that went through parliament was highly contested as it sought to add a 'sunset clause', providing a period of six years beyond which native title could no longer be claimed. Opponents of the Bill pointed out that Indigenous Australians had been waiting 200 years for this opportunity and six years was not adequate time to prepare the necessary proof of native title. The sunset clause was expunged, but many activists saw this Act as a backwards step in land rights.

ACTIVITIES

Remembering and understanding

1. Name three ways in which Eddie Mabo was politically active in his early life.
2. Describe the traditional system of land ownership that existed on the islands of Mer.
3. Why did the Howard Government release its 10-point plan in response to the Wik decision?
4. Read Source 11.7.4. What is the attitude of Denny Bowenda towards pastoralists? What do you think he means when he says, 'We helped to build that industry'?

Applying and analysing

5. Make a chronological list or time line of the key events in Eddie Mabo's life. Include significant people and events, and annotate why they are important historically. Use evidence from the text and the sources provided to complete your chronology.
6. Compare Sources 11.7.4 and 11.7.6. Account for the different perspectives of the authors of each source.
7. Examine Source 11.7.5. Explain the cartoonist's perspective about the government's attitude to the Mabo Judgment. Use evidence from the source to support your explanation.

Creating and evaluating

8. Debate whether or not there would have been a different historical outcome if Mabo had never discovered he did not own land on Mer Island? Discuss as a group, using evidence from the sources to support your argument.

UNIT 11.8

The *Bringing Them Home* report and the Apology

Reconciliation

After the significant legal advancements of the 1990s, as well as achieving recognition of land rights through the Mabo and Wik decisions, Aboriginal and civil rights activists have been focused on achieving Reconciliation with non-Indigenous Australians. Prime Minister Bob Hawke introduced the Reconciliation initiative, seeking to improve relationships between Aboriginal and Torres Strait Islander people and the wider Australian community. In 1991, parliament formed the Council for Aboriginal Reconciliation.

Among the main challenges to true Reconciliation would be the changes in government policy towards Indigenous Australians, and the uncertainty caused by the Mabo and Wik decisions. While the Hawke and Keating governments accepted responsibility, the Howard Government that followed did not.

Source 11.8.1 More than 250000 people marched over Sydney Harbour Bridge in support of Reconciliation, 28 May 2000.

The *Bringing Them Home* report

During the 1990s, non-Aboriginal Australians were increasingly made aware of the practice of removing Aboriginal children from their families, later to be known as the 'Stolen Generations'.

In 1995, under increasing public pressure, the Keating Government formed the National Inquiry into the Separation of Aboriginal and Torres Strait Islander Children from Their Families through the Human Rights and Equal Opportunity Commission. The inquiry took evidence and submissions from 56 churches and government organisations, as well as 535 Aboriginal and Torres Strait Islander people and groups. It focused on the forcible removal of Indigenous children from their families and communities.

Findings of the Human Rights and Equal Opportunity Commission

In 1997, the Human Rights and Equal Opportunity Commission presented their findings to parliament in a document titled *Bringing Them Home: Report of the National Inquiry into the Separation of Aboriginal and Torres Strait Islander Children from Their Families*. In it they identified that many officials believed they were doing the right thing at the time and in many cases children who were removed had a happy life with their adopted parents. However, the report also highlighted the many traumatised children who, as a result of being removed from their parents and community, suffered neglect and abuse, cruelty and anxiety. The report identified a connection between the present issues of poor Aboriginal health and welfare with the long-term systematic removal of children from their families.

Government refusal

When the *Bringing Them Home* report was released, the state governments were quick to respond. Each parliament sought to fulfil certain recommendations of the report, including a formal apology from each premier. The Howard Government, however, expressed 'regret' over the forcible removal of children, but refused to offer a formal apology or provide monetary compensation to victims of forced removal and their families (see Source 11.8.2).

In 1999, Prime Minister John Howard, presented a 'Motion of Reconciliation' in federal parliament where he again abstained from a formal apology, rather referring to the maltreatment of Indigenous Australians as a 'blemish' in Australia's national history. The federal government's continued refusal to provide a formal apology became a matter of public debate in discussions about Aboriginal Reconciliation.

I have never been willing to embrace a formal national apology, because I do not believe the current generation can accept responsibility for the deeds of earlier generations. And there's always been a fundamental unwillingness to accept, in this debate, the difference between an expression of sorrow and an assumption of responsibility.

Source 11.8.2 John Howard explains his stance on giving a formal apology, 2007.

The Apology

On 13 February 2008, Labor Prime Minister Kevin Rudd delivered the much-awaited '**Sorry Speech**' to a joint sitting of both houses of federal parliament (see Source 11.8.3). The Apology was not accompanied by a promise for monetary compensation, but was still welcomed by many Australians. Attended by members of the Stolen Generations and watched by many more Australians on television and live streaming, the apology was a significant—and for many, an emotional—moment in Australia's history.

The 'Sorry Day' speech finally provided an official recognition of the Stolen Generations, acknowledged blame for the injustices suffered and sought to address present and continuing injustices.

I move:

That today we honour the Indigenous people of this land, the oldest continuing cultures in human history.

We reflect on their past mistreatment.

We reflect in particular on the mistreatment of those who were Stolen Generations—this blemished chapter in our nation's history ...

We apologise for the laws and policies of successive parliaments and governments that have inflicted profound grief, suffering and loss on these our fellow Australians ...

And for the indignity and degradation thus inflicted on a proud people and a proud culture, we say sorry ...

to remove a great stain from the nation's soul and, in a true spirit of Reconciliation, to open a new chapter in this history of this great land, Australia ...

There are thousands, tens of thousands of them: stories of forced separation of Aboriginal and Torres Strait Islander children from their mums and dads over the better part of a century ...

we are the bearers of many blessings from our ancestors; therefore we must also be the bearer of their burdens as well ...

We offer this apology to the mothers, the fathers, the brothers, the sisters, the families and the communities whose lives were ripped apart by the actions of successive governments under successive parliaments ...

Source 11.8.3 From Prime Minister Kevin Rudd's 'Sorry Speech', 13 February 2008

ACTIVITIES

Remembering and understanding

1 Why was the *Bringing Them Home* report written?
2 Why was the speech made by Kevin Rudd on 13 February 2008 so significant?

Applying and analysing

3 What do you think the image in Source 11.8.1 will tell future generations who are evaluating and analysing the perspective of the people shown? What might they be able to tell about the historical significance of 'Sorry Day'?

Creating and evaluating

4 Determine how Source 11.8.3 links the event of the Stolen Generations to issues within Indigenous communities today? Write a 250–300-word report explaining these links. Use information from the text and sources to support your statements.

UNIT 11.9

Achieving change

Methods to achieve change

The road to change for Aboriginal and Torres Strait Islander peoples was built on multiple efforts by many courageous individuals and groups. Prior to 1967, most activists believed that Indigenous people would only achieve equal rights if the Commonwealth took responsibility for Aboriginal affairs. As a result, a national campaign became the focus of activists' efforts. They adopted methods used by civil rights and freedom fighters throughout the world. These included using peaceful methods of protest such as those used by Gandhi in India and Martin Luther King Jr in the United States.

Source 11.9.1 Michael Anderson, Billy Craigie, Bert Williams and Tony Coorey on Australia Day, January 1972

Methods used by activists included:

- petition campaigns—over 100 000 signatures in 94 petitions were gathered
- Freedom Rides—places where overt discrimination was being practised were visited, which gave Charles Perkins, SAFA and the other protesters the opportunity to agitate for change at both a local and national level
- media campaign—use of newspaper, radio and television to raise awareness was most notable during the Freedom Rides when an ABC news crew accompanied the university students and provided daily updates on the events that took place
- legal campaigns over land rights—for example, the Mabo Judgment in 1992.

Possibly the most controversial and notable method used by activists was the construction of the Aboriginal Tent Embassy in Canberra.

1 ***Control of the Northern Territory as a State within the Commonwealth of Australia; the parliament in the NT to be predominantly Aboriginal with title and mining rights to all land within the Territory.***

2 ***Legal title and mining rights to all other presently existing reserve lands and settlements throughout Australia.***

3 ***The preservation of all sacred sites throughout Australia.***

4 ***Legal title and mining rights to areas in and around all Australian capital cities.***

5 ***Compensation monies for lands not returnable to take the form of a down payment of six billion dollars and an annual percentage of the gross national income.***

Source 11.9.2 The Aboriginal Embassy's five-point plan for land rights, presented to Parliament in February 1972

The Aboriginal Tent Embassy

On Australia Day in 1972, four Indigenous activists, Michael Anderson, Billy Craigie, Bertie Williams and Tony Coorey, erected a beach umbrella on the lawns of Parliament House (now Old Parliament House) with a sign saying 'Aboriginal Embassy'. Their actions inspired other activists, who responded by setting up more tents, with numbers swelling to 2000 people.

The federal government did not respond positively to this, with the Minister for the Environment, Aborigines and the Arts, Peter Howson, labelling the embassy as an 'illegal act of trespass' and the protestors as 'unrepresentative militants'. The Tent Embassy was right by the entrance to Parliament, where it could be seen by visiting dignitaries, so it was highly visible, and considered to be an embarrassing unsightly affront. Minister for the Interior, Ralph Hunt, made changes to existing laws to enable the forcible removal of the Aboriginal Embassy.

As the government became more hostile in their actions, public support and sympathy grew. Parliament was divided over the issue, with 26 Labor Members of Parliament announcing that they would physically obstruct action taken to remove the embassy.

On 20 July, a 150-strong police force dismantled the embassy, leading to a series of clashes between police and activists. Supporters linked arms and sang songs while police made arrests and television cameras watched on, capturing the violent interaction. The following week the activists erected their tents again, resulting in further confrontation as a 360-strong police force pulled the embassy down a second time. Hundreds of supporters wrote to Prime Minister Billy McMahon in protest at the government's actions. Further activist action continued, including the tents being erected again in 1974 until 1976, when Charles Perkins negotiated their removal in exchange for Aboriginal Land Rights legislation.

A remaining civil rights protest site

The lawns of Old Parliament House have remained a site for ongoing protests against the federal government's treatment of Aboriginal and Torres Strait Islander peoples. Today, it stands as a constant visual reminder of the difficulties faced by Aboriginal and Torres Strait Islander peoples in relation to

Source 11.9.3 The Aboriginal Tent Embassy outside Parliament House, Canberra, 1974

healthcare, education and life expectancy. The choice to name this protest site as an embassy is a powerful statement, highlighting Indigenous people's lack of representation and suggesting the need to use an embassy medium to achieve representation in their own country. It also demonstrates the problems caused by their dispossession of the land, and the government's responsibility to address these issues.

ACTIVITIES

Remembering and understanding

1. The methods of peaceful protest used by Indigenous activists were based on those of which two important global figures?
2. What was the Aboriginal Tent Embassy?
3. Why do you think that the Aboriginal Tent Embassy was controversial in 1972?

Applying and analysing

4. Why was the name chosen for this site (the 'Aboriginal Tent Embassy') significant? What does a 'Tent Embassy' symbolise?
5. Using Source 11.9.3 and your own knowledge, what has been the ongoing legacy of the Aboriginal Tent Embassy?

Creating and evaluating

6. Create a slideshow about the methods used by Indigenous activists for achieving change. In your slideshow, outline the method of change, providing examples and considering the effectiveness and outcomes of each.

UNIT 11.10

Inquiry tasks

Visual essay

A visual essay is a collection of images or photographs that construct a view or argument on a particular subject. It uses the power of imagery to communicate with an audience. You still use the same essay structure (introduction, main points, conclusion) but are limited only to visuals and singular words.

1 Start by posing a thoughtful question about the issues presented in this chapter. For example, 'How did people respond to the demand by Indigenous Australians for greater equality?' or 'What methods were used by African Americans to achieve change and were they successful?'

2 Create an essay scaffold as you would for a written essay. Come up with your main points and evidence to support your ideas.

3 Decide on your means of communication. Your essay could be presented in your workbook, as a film or slideshow, as wall art or using another creative outlet.

4 Choose your images and construct your draft essay.

5 Evaluate your draft. Does it follow a clear structure and communicate your argument? Have you provided multiple dimensions and layers of meaning that are reflected in your choice of colour, image and font style?

Present your finished work to your class and place it on display. Ideally, it will generate constructive discussions and inspire others to fight for greater civil rights in the future.

Source 11.10.1 Modern-day satirical comparison of boat people and Australia's treatment of Aboriginal and Torres Strait Islander peoples, 3 December 2012

Contemporary views

The following devices are often used in political cartoons in order to communicate a particular message:

- symbolism—to represent larger concepts or ideas
- labels—to ensure that the reader knows exactly who or what is being referred to
- exaggeration—to make a person easily recognisable
- analogy—to make the point of the cartoon clearer by comparing two unlike things that share some similarities.

When you analyse cartoons you need to consider a series of questions. Use these questions to help you understand Source 11.10.1.

1 What issue is this cartoon about?

2 What is the purpose of the cartoon?

3 What is the cartoonist trying to say? What does it say about their opinion?

4 What other opinion can you imagine another person having on this same issue?

5 Who is the cartoon aimed at?

6 Explain the ways in which the cartoonist has tried to communicate their message. Were they successful?

Find another cartoon in this text or on the internet that is related to rights and freedoms. Use the questions above to write a paragraph analysing its message.

Civil action

In class, and under the supervision of your teacher, choose a current civil rights issue and plan a protest campaign using one of the methods from this chapter such as petitions, 'sit-ins', marches, 'Freedom Rides', boycotts, legal challenges and symbolic gestures, such as the Aboriginal Tent Embassy. Examine the moral, ethical and legal issues that you would have to consider and evaluate potential challenges.

Reflect on the following questions.

a What challenges were you faced with during this process?

b What moral, ethical or legal questions were raised?

c How did people respond to your protest?

d What sort of emotions did you feel before, during and after your protest?

e How has completing this activity helped you to understand the issues faced by civil rights activists in the United States and Australia?

GLOSSARY

activist a person who actively promotes a cause

assimilate take on the customs of another culture and to give up your own customs and way of life

Bringing Them Home a report published in 1997 that documents findings from the Keating Government's National Inquiry into the Separation of Aboriginal and Torres Strait Islander Children from their families

boycott deliberately withdraw from using a service, for example African Americans refusing to travel on buses

civil relating to ordinary citizens or their concerns

genocide the deliberate and systematic attempt to eradicate an entire cultural ethnic group

Ku Klux Klan an extremist right-wing group in the United States that targets African Americans

pastoralist a livestock farmer

paternalism a policy of controlling in a 'fatherly' way

protection policies laws that enabled Australian state governments to control aspects of the lives of Aboriginal and Torres Strait Islander peoples, such as where they could live, the wages they could receive and whom they could marry

Reconciliation a federal government initiative introduced in the early 1990s to improve the relationships between Aboriginal and Torres Strait Islander peoples and the broader Australian community

Social Darwinism the theory that the laws of natural selection are relevant to groups or races in the same way that they apply to plants and animals; that is, some groups have an advantage over others as the result of biological superiority

'Sorry Speech' the national address delivered by Prime Minister Kevin Rudd on 13 February 2008 to formally apologise to Australia's Stolen Generations and their descendants for the actions of past governments

Stolen Generations groups of children forcibly removed from their families under state policies, from the 1880s to the 1970s

terra nullius the notion that Australia belonged to no one when the English arrived

CHAPTER 12

Marine environments

Marine environments cover a vast area of the earth's surface and extend from the shallows surrounding the continental landmasses to the depths of the ocean—the deepest point of which is just over 10.9 kilometres below the surface of the western Pacific in the Mariana Trench.

The diverse ecosystems that make up the marine environment are facing unprecedented pressure from an increasing number of potentially competing uses. These include oil and gas extraction, fisheries, aquaculture, shipping, port expansion, coastal development, waste disposal, recreation, tourism and conservation. Extensive science-based knowledge of our marine environments is vital if we are to protect these critically important ecosystems.

Source 12.0.1 Small fish called sweepers swim around soft coral in the Red Sea, Egypt.

UNIT 12.1

Importance of marine environments

The oceans

The marine environment is the largest of all earth's ecosystems. It includes the oceans, salt marshes, intertidal wetlands, mangrove forests, estuaries, lagoons, coral reefs, ocean depths and sea floor.

The earth's oceans cover 71 per cent of the planet's surface area. Deep oceans, where ocean depths are greater than 200 metres, make up 87 per cent of this. The deep ocean is an environment we know very little about, yet it is critical to all life on earth. Source 12.1.1 shows the angler fish, a species that lives in the deep oceans.

The marine environment accounts for about two-thirds of the world's ecosystem services. These are the services that environments provide in order to keep the world functioning: releasing the oxygen we breathe and moderating temperature extremes. Phytoplankton, tiny photosynthesising plants found in the world's oceans, provide 50 per cent of all the oxygen on earth.

Source 12.1.1 The angler fish lives 1000 metres below the surface of the water.

Oceans—the benefits

Carbon cycle

One of the most important service functions of the marine environment is the role it plays in the **carbon cycle**: moving and storing carbon. In recent decades, with growing knowledge of the impact of human activities on the carbon cycle through the burning of fossil fuels, the importance of the oceans in the cycle has become more apparent. Rising levels of carbon dioxide in the **atmosphere** are the main cause of climate change, leading to global warming. Marine organisms, ranging from microscopic phytoplankton through to large marine mammals such as whales, take carbon from the atmosphere and deposit it in the deep oceans. Without the oceans taking carbon out of the atmosphere, there would be no life on earth. Increasing levels of atmospheric carbon, due to human activities, are causing an increase in the acidity of the water. This process, known as **acidification**, is affecting the ocean biosphere (fauna and flora). Source 12.1.2 shows the effect on sea urchins of the oceans becoming more acidic.

Did you know?

A 2010 study published in *Nature* reported that the number of marine phytoplankton has declined by 40 per cent since 1950, at a rate of about 1 per cent per year, possibly in response to ocean warming.

Economic benefits

In a typical year, more than 80 million tonnes of wild fish are caught in the world's oceans. The global fishing industry employs about 35 million people directly and a further 300 million people indirectly, and is worth at least US$80 billion a year. Seafood is the major source of protein for millions of people. Additionally, the world's oceans are major trade highways. Ships transport virtually all the world's raw materials, from coal and oil to wheat and rice. More than 100 million containers of goods containing everything from T-shirts to mobile phones are moved across the oceans every year.

Social benefits

The marine environment has an important spiritual and cultural value. Many people feel joy when they see whales in the wild or hear waves crashing onto the beach. The indigenous people of Hawaii, like many other Pacific peoples, have a strong spiritual bond with the marine environment. The ocean is referred to as *ke kai popolohua mea a Kane* (the deep dark ocean of Kane) and has great religious importance. For the Hawaiians, the ocean provided everything that they needed and therefore was worshipped and honoured.

Source 12.1.2 Acidification as a result of high levels of CO_2 causes a sea urchin's spines to dissolve (left). Compare this with a sea urchin under normal CO_2 conditions (right).

ACTIVITIES

Remembering and understanding

1. Outline the role of the marine environment in terms of ecosystem services.
2. Explain the role played by the oceans in the carbon cycle.
3. Describe the benefits humans receive from the oceans.

Evaluating and creating

4. Assume the perspective of an environmentalist. You have been asked to prepare a presentation to the United Nations on why the world needs to take better care of the oceans. Prepare a short digital presentation and oral report to present in class. You may wish to do this activity in a small group.

UNIT 12.2

Human impacts on marine environments

Marine management issues

Vast areas of the marine environment have been subject to great change as a result of human activity. Unlike land environments, much of the world's oceans is beyond the control of individual nations. The oceans are largely left unmanaged and their use is unregulated. This has resulted in unsustainable fishing and dumping of wastes and toxins.

Marine pollutants

Marine debris, or marine litter, is defined as any persistent, manufactured or processed solid material discarded or abandoned in the marine or coastal environment. Marine debris is harmful to marine life, especially to protected species of birds, sharks, turtles and marine mammals. Marine debris may cause injuries or death through drowning, injury through entanglement and internal injuries or starvation following ingestion. Discarded fishing nets and hooked lines are among the most dangerous of all marine debris. Known as ghost nets, they kill marine life long after they have ceased to be used by humans.

Other marine pollutants include chemical discharges from factories and farms, such as fertilisers and pesticides, sewage, urban run-off and discharges from ocean-going vessels.

The Great Pacific Garbage Patch

The Great Pacific Garbage Patch is an enormous collection of rubbish that has accumulated in the eastern Pacific Ocean between Japan and North America, in the North Pacific Gyre. A gyre is a circular ocean surface current created by wind movements and the rotation of the planet. The centre of a gyre tends to have very stable and calm waters. Rubbish from across the Pacific has accumulated and become trapped in the North Pacific Gyre. A similar, smaller rubbish accumulation is found in the North Atlantic Gyre. The North Pacific Gyre contains a huge array of materials. Much of it is tiny pieces of plastics that enter the food chain, slowly poisoning marine life. Sea turtles, mistaking plastic bags for jelly fish, ingest them and die.

Scientists visiting the remote part of the Pacific have collected up to 750 000 pieces of plastic in a single square kilometre. The rubbish is so dense in some parts that the whole food chain is disrupted. Sunlight cannot penetrate through the surface, which leads to the collapse of the phytoplankton that form the basis of the food web and rely on sunlight.

Dealing with these vast rubbish patches has been very challenging. As no country has control over the waters in which they are found, action has been slow. At present, much of the work is limited to research and alerting the public to the nature of the issue. In 2010, a group of activists sailed *Plastiki*, a raft made entirely from plastic rubbish, across the Pacific from San Francisco to Sydney to highlight the damage that plastic is doing to the marine environment.

Source 12.2.1 Found in one of the most isolated places on earth, the Great Pacific Garbage Patch is a vast accumulation of plastics and other rubbish.

Source 12.2.2 In 1979, the *Atlantic Empress* collided with another ship off the African coast, releasing 287 000 tonnes of oil.

Oil and gas exploration

Oil and gas are the world's most widely used energy sources. Known as fossil fuels, oil and gas deposits (coal is also a fossil fuel) were formed millions of years ago when plants and animals sank to the seabed and were covered by layers of mud and sand, which were eventually compressed into rock.

Initially, land-based reserves of oil and gas were exploited; for decades, and offshore deposits have also been identified and exploited. Huge rigs are constructed to drill through the sea floor and pump out the oil and gas under pressure. The oil and gas is then transferred to processing plants, often offshore floating factories, and sent ashore. Technological advances have made oil and gas exploration possible in areas previously too hard to exploit, for example deep-ocean drilling and drilling in the inhospitable Arctic Ocean. As near-shore reserves continue to dwindle, more and more drilling is likely to take place in deep oceans.

The world's oil and gas are not evenly distributed. Huge reserves are found in the Middle East, Central and South America and in the North and Arctic seas. To move the fuels to where they are consumed, massive oil tankers and pipelines have been constructed. The tankers are the largest machines ever built by humans and have the capacity to move more than a billion tonnes of fuel around the world each year. While accidents are quite rare, due to improvements in safety standards, the environmental impacts of oil spills can be devastating. In July 1979, the *Atlantic Empress* collided with another tanker, the *Aegean Captain*, off Tobago in the Caribbean Sea (see Source 12.2.2). The accident led to the spill of 287 000 tonnes of oil into the Caribbean Sea and the Atlantic Ocean, and was the biggest oil tanker spill in history. Oil is highly toxic to marine species and its effects linger for decades.

Climate change

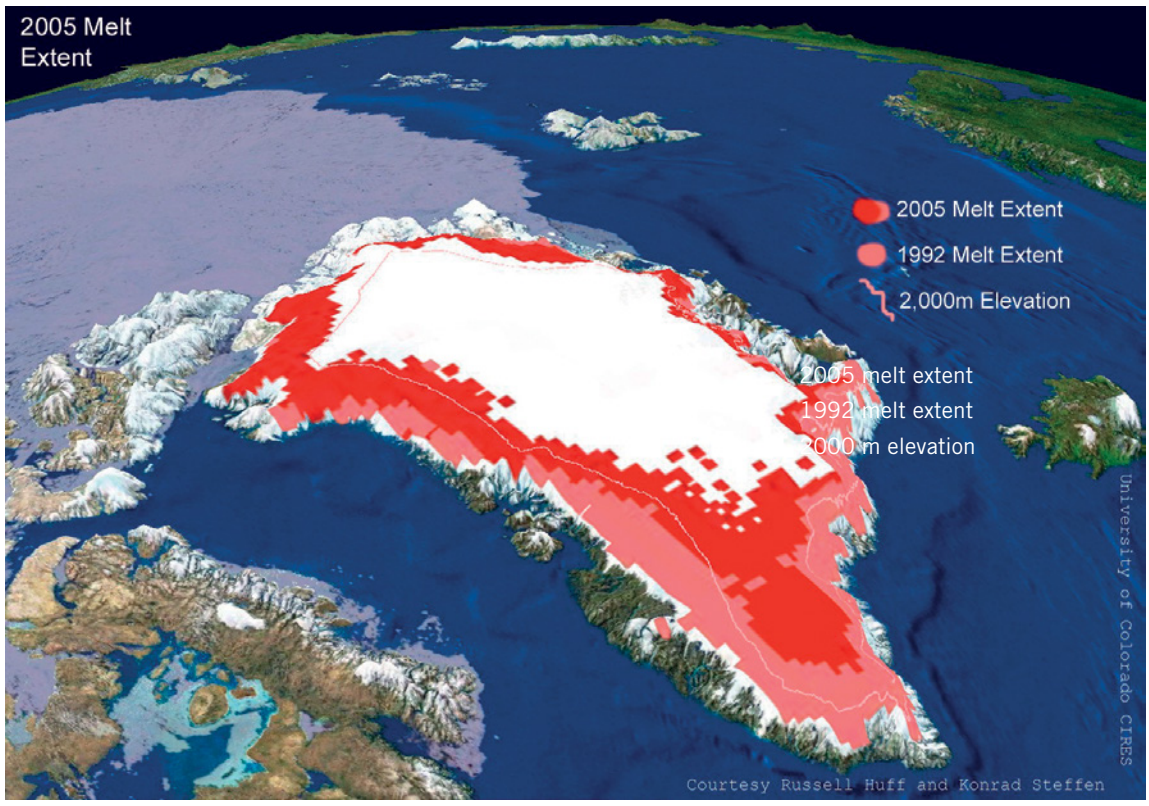
The impact of climate change on the marine environment is extreme. One of the most obvious consequences is sea-level rise. As the world's climate warms, a process of **thermal expansion** takes place. When water warms, the particles in water expand; therefore, water rises as it warms. Scientists believe that sea levels may rise by as much as 1 metre. Rising sea levels are already leading to flooding of low-lying islands and coastal areas. The world's oceans absorb huge quantities of carbon, and as atmospheric carbon increases so does the carbon stored in the oceans. This increase in carbon is slowly turning the oceans more acidic. This acidification is having an impact on the biosphere.

As temperatures rise, ecosystems around the world are being affected. Fragile coral reefs that require very specific temperature ranges are disappearing. There are also grave concerns for the future of the huge ice sheets that lock away most of the world's fresh water. The Greenland ice cap beyond the Arctic Circle is already beginning to shrink, as shown in Source 12.2.3 The fresh water that is added to the oceans as a result of the melting changes the chemical composition of the sea water. This in turn affects the movement of ocean currents, which are driven by changes in water density, associated with how saline (salty) the water is.

Scientists fear that changes to the density of waters around Greenland could affect the Gulf Stream, which regulates temperatures across the eastern part of North America and the north-west of Europe. Ironically, the world becoming warmer may cause the Gulf Stream to stop flowing, bringing freezing temperatures to a large part of the world.

Fishing

More than 15 per cent of the world's population rely on seafood for their main source of protein. As the world's human population has increased, the strain on the world's fish stocks has grown markedly. Since the 1970s, about 20 of the world's most important fishing grounds have disappeared as a result of unsustainable fishing practices. The collapse of



Source 12.2.3 The extent of the Greenland ice cap, 1992 and 2005. Cooperative Institute for Research in Environmental Sciences (CIRES), University of Colorado Boulder, 2005

Source 12.2.4 Cod fishing, off Newfoundland, Canada, 1979

the Grand Banks cod fishery (see Source 12.2.4) in the North Atlantic Ocean is one of the best known examples. This once vast and seemingly endless fishing ground had disappeared by the 1990s, due to overfishing. Currently, cod stocks in Canadian waters are recovering slowly.

In addition to declining fish stocks, large-scale commercial fishing has other consequences for the marine environment. The heavy gear that trawlers drag across the sea floor kills species that cannot move. Large nets catch many non-commercial species that are simply thrown away—this is known as **by-catch**. Driftnets can be up to 65 kilometres long and are dragged through the water for a number of days, trapping fish indiscriminately. Some nets now have special escape routes for dolphins and turtles, but they are not used in most parts of the world.

ACTIVITIES

Remembering and understanding

1 What is the Great Pacific Garbage Patch?
2 Explain why there has been so little attention paid to the garbage gyre.
3 Outline the main causes of climate change.
4 Explain the impact of climate change on the marine environment.
5 Outline the impacts of commercial fishing on the marine environment.

Applying and analysing

6 Write a short report on the risks to the marine environment posed by oil and gas exploration.

Evaluating and creating

7 Work in small groups. Using the text, the internet and other sources, produce a digital presentation on the impact of human activities on marine environments. Share your presentation with the class.

UNIT 12.3

Managing marine environments

Agreements and cooperation

The marine environment is among the least managed environments on earth. A key reason for this is a lack of real understanding of the world's oceans, their processes and the ecosystems they support. More of the moon has been mapped and researched than the ocean depths.

Environmental management is usually the responsibility of governments, but much of the world's marine environment lies beyond the territorial limits of individual nations, in an area known as the high seas. Individual governments do not have the power to manage this environment. Consequently, international cooperation is critical for its effective management.

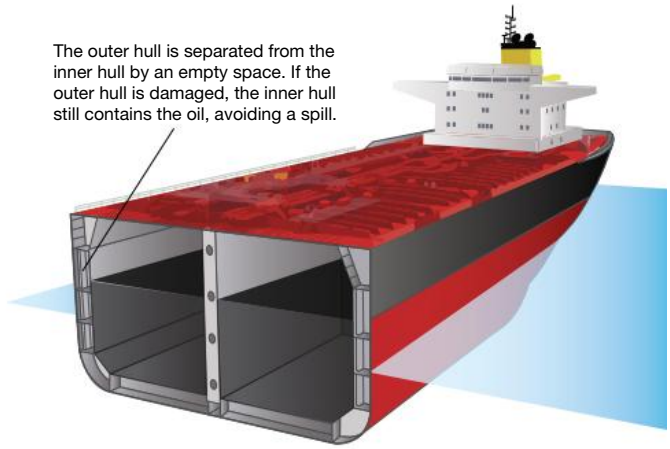
Until the late 20th century, there was very little cooperation or agreement between nations regarding environmental management. Today, a growing number of international agreements deal with the protection of the marine environment.

International agreements can only be successful in protecting the environment when a significant number of nations are prepared to follow the rules set out in the agreements. Sometimes nations act in their own interests rather than in the broader global interest, and this limits the success of international cooperation.

Convention for the Prevention of Pollution from Ships

One of the first attempts to create an international agreement regarding the marine environment was the International Convention for the Prevention of Pollution from Ships in 1973. Most countries were not interested in the agreement until a series of tanker accidents occurred in 1976 and 1977. These accidents highlighted the danger to the environment posed by oil tankers. In 1978, Regulations for the Prevention of Pollution by Oil were added to the Convention now known as MARPOL.

The Convention requires all new tankers to have double hulls: an outer and an inner hull with a gap between them, as shown in Source 12.3.1. If the outer hull is damaged by a collision, the inner hull should remain intact and stop oil from flowing out.



Source 12.3.1 Cross-section of a double-hulled oil tanker

Other parts of the Convention control the movement of dangerous substances, such as radioactive materials. There are also restrictions on the dumping of toxic chemicals, rubbish and sewage from ships.

Wellington Convention

The Wellington Convention is an international agreement to protect the marine environment in the South Pacific region. Its full title is the Convention for the Prohibition of Fishing with Long Driftnets in the South Pacific. It was agreed to by 14 countries in 1989. This convention protects fishery resources throughout the South Pacific Ocean by banning fishing with driftnets over 2.5 metres long.

Driftnets are sometimes called 'walls of death'. The nets are strung out to drift near the surface and capture fish by entangling them around their gills. Traditionally, driftnets were small, but modern commercial driftnet boats use very large nets. These nets are equipped with floats to keep them on the surface and weights that attach to the sea floor, creating a curtain to trap anything that swims into the net.

As the nets do not discriminate, they create very large by-catches. These are species that are not meant to be caught and they are often thrown back, already dead. Turtles are particularly vulnerable, as are dolphins and many shark species. Driftnets become even more dangerous if they are lost at sea. The nets are made of nylon, and can float around for decades, entangling animals. The success of the Wellington Convention has led to the protection of other marine environments

outside the South Pacific. Authorities in the United States have banned driftnetting along parts of the western US coast.

Whaling in the Southern Ocean

In 1982, the International Whaling Commission (IWC) placed an indefinite moratorium (ban) on the commercial hunting of most whale species. A huge whale sanctuary was declared in the Southern Ocean in 1994, the Southern Ocean Whale Sanctuary. It protects important feeding grounds for many whale species around Antarctica. Since the introduction of the moratorium, whale numbers have increased.

Although a member of the IWC, Japan has continued its whaling program, arguing that their program is for scientific research. Environmental groups and whale experts argue that this is a lie. They say that the program is purely for commercial whaling, and the whale meat is sold in fish markets in Japan. They also point out that almost no scientific papers about the program have been written by Japanese researchers, while scientists studying whales in other countries produce excellent research without harming any whales at all.

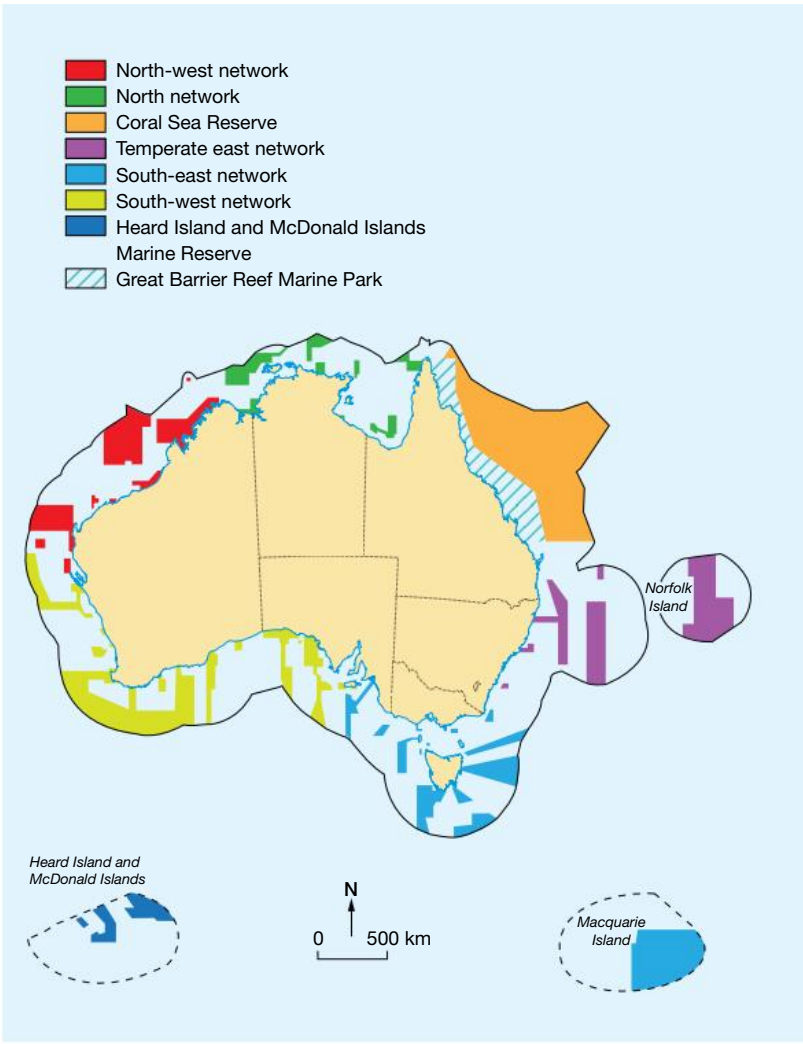
Japan had been exploiting a loophole in the international agreements that regulate whaling for scientific hunting. Other countries have argued that Japan is not acting in the best interest of the environment and is not fulfilling its obligations under the agreement. Environmental groups have taken more dramatic action. The not-for-profit organisation Sea Shepherd is one of the most vocal critics of the Japanese program. It sends ships to harass the Japanese whaling fleet. Groups such as Sea Shepherd rely on individuals to support them and apply pressure to the Japanese Government to abandon their whaling program.

In 2014, the International Court of Justice in The Hague ordered Japan to cease whaling in the Antarctic. The ICJ ruling stated that Japanese whaling was commercial and not for scientific purposes. This was in violation of the IWC moratorium.

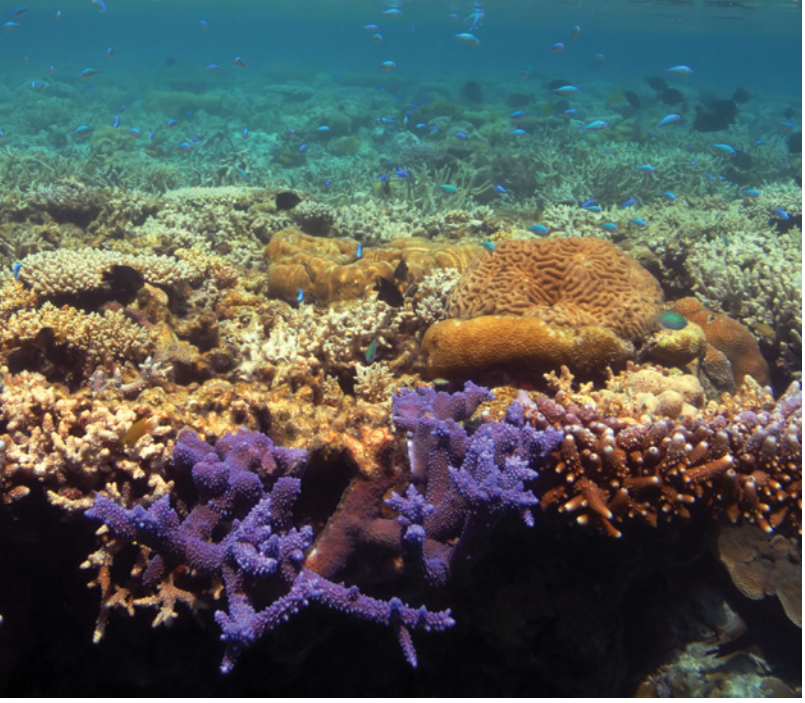
Marine management in Australia

Australia has become a world leader in managing its marine environment. The fishing industry is heavily regulated, with strict quotas used to maintain sustainable fisheries. Extensive marine parks have also been established along large areas of the Australian coast, as shown in Source 12.3.2. Some people have been critical of these parks as they limit commercial fishing.

With the Australian demand for seafood growing every year, it has been argued that Australia is protecting its marine environment at the expense of environments elsewhere. Well over a $1 billion worth of seafood is imported into Australia annually, much of it from South-East Asia. There are concerns that the demand for seafood by Australian consumers is causing the destruction of the marine environment throughout the region.



Source 12.3.2 Australia's extensive network of protected marine environments. Note that Macquarie Island, Heard Island and McDonald Islands are not shown on the map in their correct location according to the scale. © Commonwealth of Australia 2014



Source 12.3.3 Pristine coral in Rowley Shoals Marine Park

Managing coral reefs

Covering an area of 348 000 square kilometres, the Great Barrier Reef (GBR) is the largest coral reef system in the world. In 1981, its importance was recognised by the United Nations Education, Scientific and Cultural Organization (UNESCO) when it listed the reef as a World Heritage site. The reef contains enormous biodiversity. Fifteen hundred of the world's 13 000 fish species are found there, along with six of the seven turtle species, more than 200 species of birds, 500 species of seaweed, 600 species of echinoderm, 125 species of shark and rays and about 360 species of hard coral.

Managing a large-scale marine environment with such an amazing diversity of species is challenging. The Great Barrier Reef Marine Park Authority (GBRMPA) is responsible for balancing the interests of humans and the need to protect the environment. Hundreds of large ships navigate through the reef every year, travelling to and from the huge coal ports on the Queensland coast, and more than 2 million tourists visit the region every year. An increasing number of visitors arrive on cruise ships.

In Western Australia, the Clerke and Imperieuse reefs form the Rowley Shoals Marine Park. These reefs are more remote than the Great Barrier Reef and are known for being less affected by human activities. Like the Great Barrier Reef, they also have a great diversity of species. At least 233 species of coral and 688 species of fish can be found in the reefs. The park is managed by the WA Department of Environment and Conservation.

In both the Great Barrier Reef and the Rowley Shoals Marine Park, authorities have established different management zones in which activities are controlled; for example, commercial fishing is limited to certain areas. In the Great Barrier Reef, about 85 per cent of tourism activity is confined to just 7 per cent of the reef system, minimising the impact. Reef and marine research are conducted in both the Great Barrier Reef and Rowley Shoals to learn more about how to manage the reef. One issue investigated is coral bleaching. This occurs when corals expel the algae (zooxanthallae) which gives them their colour, causing them to become completely white. Most corals struggle to feed themselves without their zooxanthallae.

The role of the individual

The actions of individuals can have a very significant impact on the marine environment.

Everyday actions

When individuals drop rubbish on the ground, it makes its way into stormwater systems and eventually floats out to sea. This is how the rubbish collected in North Pacific Gyre. Individuals taking greater responsibility for their rubbish is more effective than the installation of rubbish traps over stormwater outlets.

Direct action

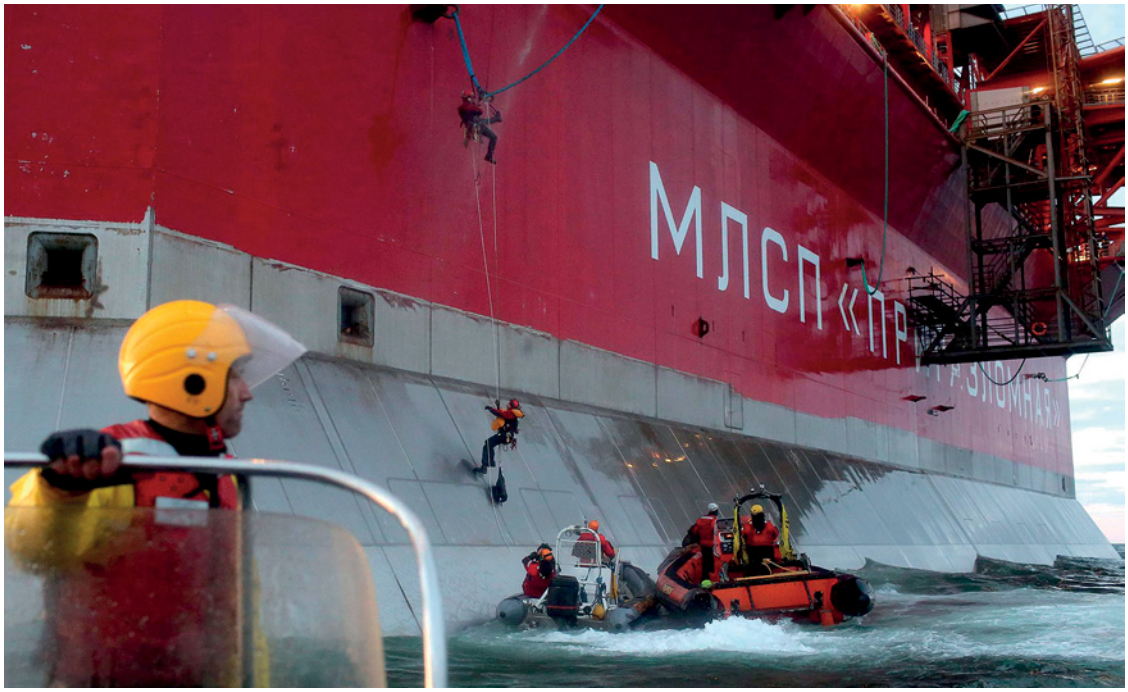
Environmental organisations such as Greenpeace and Sea Shepherd rely on individuals for support.

In 2013, oil companies began drilling deep-sea wells well above the Arctic Circle. Environmentalists fear that the pristine environment here will be destroyed by a spill. In 2013, 30 Greenpeace activists boarded an oil rig and attempted to unfurl a banner highlighting the dangers of drilling. They were arrested by Russian police, as shown in Source 12.3.4.

Consumer choice

Consumers are increasingly aware that the decisions they make about products can have a significant impact on the environment. Much of the canned tuna sold in Australian supermarkets now is labelled as dolphin friendly. This means that the tuna has been caught by methods that protect dolphins from being accidently caught. This growth in dolphin-friendly tuna in the late 20th century was a result of consumer demand.

An awareness of the damage that large-scale commercial fishing causes to the environment has



Source 12.3.4 Greenpeace activists attempting to board a Russian oil rig

led to a rise in demand for sustainable seafood. The Marine Stewardship Council now provides certification that companies can use to indicate to consumers that they have met rigorous standards for harvesting seafood in a sustainable fashion.

Consumer boycott

The Brent Spar, a 4000-tonne facility located in the North Sea, was constructed in 1976 to temporarily store oil from oil rigs until it was taken ashore by tankers.

In 1997, energy company Royal Dutch Shell, which owned Brent Spar, announced it was planning to sink the storage facility, as it was no longer in use. Environmentalists feared that sinking the facility would cause huge environmental damage, as it was contaminated with toxins. Greenpeace called on consumers to boycott Shell petrol stations throughout Europe. This boycott proved so successful that Shell backed down and agreed to tow Brent Spar to Norway to be thoroughly cleaned, dismantled and recycled.

ACTIVITIES

Remembering and understanding

1. Explain why managing the marine environment in the area known as the high seas is challenging.
2. Outline the importance of international agreements for managing the marine environment.
3. Describe how the MARPOL Convention protects the marine environment.
4. Outline the purpose of the Wellington Convention.
5. Assess the justifications given by Japan for whaling in the Southern Ocean.
6. Outline why the Great Barrier Reef was given World Heritage status.
7. Describe the role of environmental organisations in protecting the marine environment.

Applying and analysing

8. Create a PMI chart on marine parks in Australia.

Evaluating and creating

9. Design an advertising campaign to encourage individuals to take action to protect the marine environment.
10. Assume the role of a fisheries manager. You have been asked to give a presentation to the Environment Minister of a developing nation that allows large driftnets to be used in their waters. Prepare a digital presentation to convince the Minister to agree to the Wellington Convention.

Case study: Bass Strait

Location

Bass Strait is a wide channel separating mainland Australia from Tasmania. At its widest point, it is 240 kilometres wide. Closer inshore, its depth is often less than 20 metres, but at its deepest it exceeds 120 metres. The shallowness of Bass Strait creates the perfect environment for large swells and waves, and consequently the Strait is famous for its rough seas.

The vast Southern Ocean lies to the west of Bass Strait and the Tasman Sea to the east (see Source 12.4.1). Low-pressure weather cells, which form in the Southern Ocean, sweep up from Antarctica towards Australia. These cells bring with them large storms and seas, creating strong south-westerly winds in the Indian Ocean, which are funnelled into the eastern part of Bass Strait. These winds create the legendary storms characteristic of the Strait. During these storms, the waves regularly reach 4 metres and can exceed 7 metres.

Biodiversity of Bass Strait

The cool waters of Bass Strait are highly productive and support a wide diversity of marine life. In the coastal waters, mammals such as seals are found and extensive kelp forests provide an important habitat for many creatures.

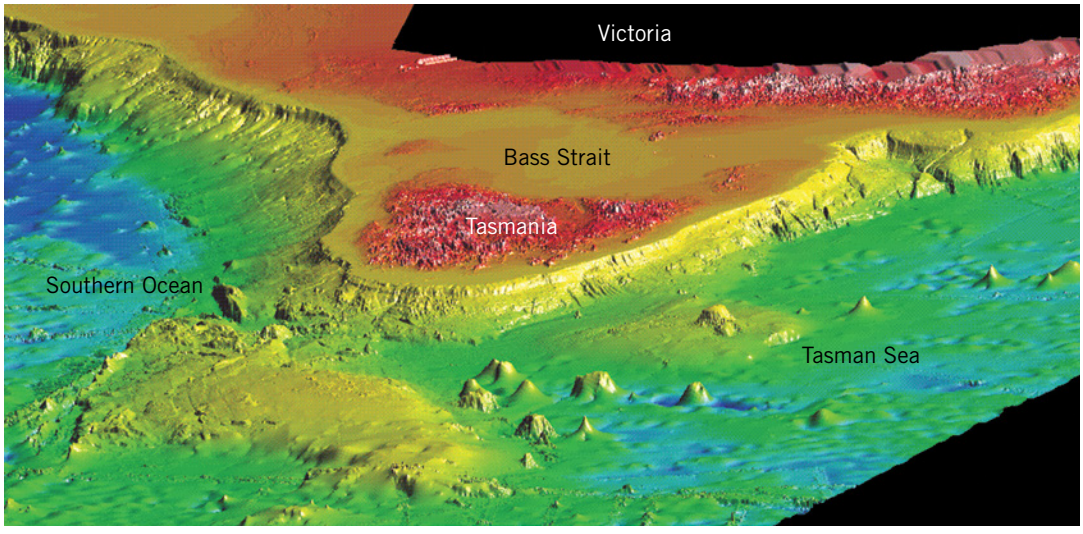
The giant cuttlefish is found in these forests. These beautiful creatures, which grow to more than 1 metre in length, have a life span of only two years. The short life span means that disturbances to the breeding cycle can have a dramatic impact on the species. Giant cuttlefish are commonly caught as by-catch by commercial fishing operations.

Human impacts

Bass Strait is a busy and important shipping route. Threats of oil spills from shipping accidents are ever-present but fortunately large oil spill accidents have been rare. Since the 1960s, oil and gas exploration and drilling have been undertaken in the Strait.

The Strait's oil reserves are declining and some experts predict that the fields will cease production within the next decade or two. Energy companies are now turning their attention to gas, which is considered to be a cleaner energy source than oil. The demand for gas is growing in Australia and around the world. Several large companies are now actively drilling for gas reserves in the Strait.

The huge oil rigs that dot the north-eastern part of Bass Strait (see Source 12.4.2), off the Victorian coast, pose one of the greatest risks to the environment. In October 2013, 750 litres leaked from the Cobia pipeline into Bass Strait. Although only a small leak, environmentalists have pointed to the spill as evidence that the oil infrastructure in the Strait is ageing. Some of it is more than 30 years old and it is feared that more serious spills may occur in the future.



Source 12.4.1
The continental shelf, showing Bass Strait, located between mainland Australia and Tasmania

Source 12.4.2 Oil rigs dot the Victorian side of Bass Strait.

Managing the Bass Strait

Although now in decline, the oil industry is still important in meeting Australia's energy needs. Bass Strait is also important to the shipping and fishing industries. This human activity takes a toll on the environment of Bass Strait. The Strait is now extensively managed.

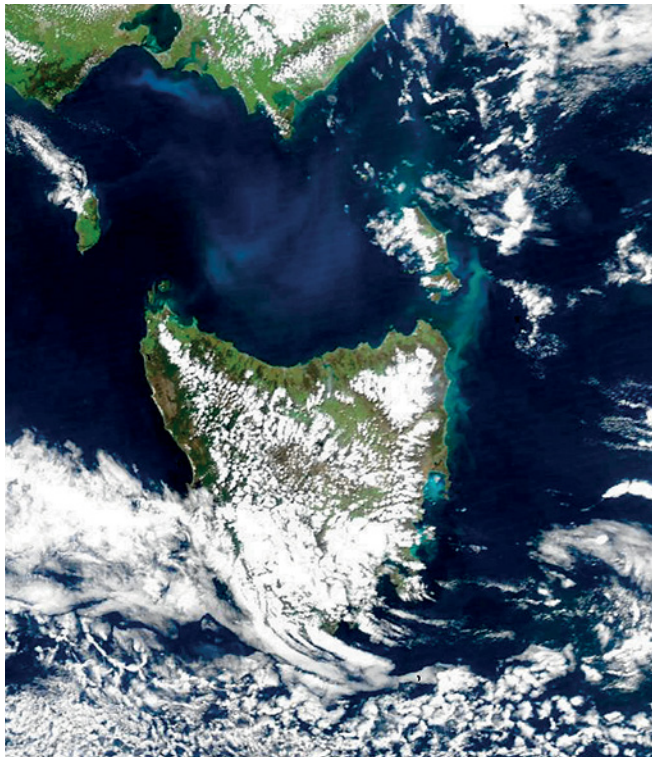
Dealing with pollution

The coastline of Bass Strait is quite heavily populated, especially the Victorian coastline, which takes in Port Phillip Bay. The urban areas abutting Bass Strait have long been a source of pollution. Toxins from industry, sewage, plastics and other rubbish all take a toll on the marine environment.

Algal blooms have become a feature of Bass Strait coastal waters in recent years. The blooms can grow very large and have a great impact on the environment. The algae are toxic and take oxygen out of the water, which leads to the deaths of fish and other marine life. In 2013, the emergence of toxic blooms in the north of Tasmania, shown in Source 12.4.3, resulted in a ban on shellfish harvesting in much of Bass Strait. The algae are caused by run-off from inland areas that are rich in nutrients, such as fertiliser, and also by the release of untreated sewage. Management and treatment of stormwater is essential for reducing the impact of the algal blooms.

Research conducted by La Trobe University into seabirds in Bass Strait has revealed the impact of plastics. One study on Phillip Island into fledgling (very young) mutton birds found that they have on average seven pieces of plastic in their stomachs. These plastics are toxic and can gradually kill the birds. Researchers found that the nest-bound chicks have been fed regurgitated fish containing plastics by their parents.

Source 12.4.3 This 2004 algal bloom in Bass Strait was so large that satellites were used to track it.



Authorities are beginning to deal with this issue through education programs to alert the public that the rubbish they drop into drains and gutters makes its way into the marine environment. Traps installed over stormwater pipes and booms that are strung across waterways also capture rubbish. These are effective but require regular emptying and maintenance

Tamar Valley pulp mill

Forestry is one of the most significant and controversial industries in Tasmania. A large pulp mill to make paper has been planned for Bell Bay in northern Tasmania since 2004. The mill has been approved and in 2013 the original owners of the site, Gunns, went bankrupt, and the approval for the mill was offered for sale.

Some local residents and environmentalists have always opposed the mill, claiming that it will have a huge impact on the environment, including Bass Strait. They have been led by the Friends of the Tamar Valley group. The group uses community action and protests to highlight the dangers of the mill.

If built, the mill is expected to dump about 640 000 tonnes of waste water into Bass Strait daily. This waste will contain a mixture of chemicals, including highly toxic dioxins and furans (a type of dioxin). Both these toxins remain in the environment for decades and gradually affect the entire food chain.

Source 12.4.4 Community and environmental groups protesting against the construction of a pulp mill in Bell Bay on the coast of northern Tasmania

Managing the oil and gas industry

Oil and gas drilling poses one of the greatest risks to the marine environment of Bass Strait. Fortunately, there has not been a major spill of oil in Bass Strait, but the environmental impact of a major rig incident could be catastrophic.

Source 12.4.5 Harvesting scallops in Bass Strait

The National Offshore Petroleum Safety and Environmental Management Agency (NOPSEMA) is an Australian Government agency that has responsibility for regulating oil and gas exploration offshore. NOPSEMA conducts environmental assessments into drilling applications and is responsible for monitoring the environmental impacts of offshore gas and oil operations. The agency also coordinates responses to oil spills, and works with the industry to develop contingency plans to ensure that spills are dealt with quickly and correctly.

Managing the fishing industry

Bass Strait has an important commercial fishing industry. Throughout much of the 20th century this industry was unrestricted and unsustainable catches led to a decline in important commercial species. Today, like other fishing zones in Australia, Bass Strait fishing is subject to quotas and strict licences to ensure that fishing is sustainable.

One of the most significant seafood industries in Bass Strait is the scallop industry. In the 1980s, more than 300 boats harvested about 40 000 tonnes of scallops annually from the Strait. In December 2005, the Australian Fisheries Management Authority (AFMA), which manages commercial fishing throughout Australia, closed the Bass Strait scallop fishery. This was to allow the vast scallop beds to replenish after many years of unsustainable harvesting. In May 2009, scallop harvesting in Bass Strait was allowed again (see Source 12.4.5), but AFMA imposed extensive restrictions. This included reducing the number of boats from 120 to just 17. Strict quotas for each boat are set each year, based on detailed surveys.

Evaluating management

Source 12.4.6 provides an outline and evaluation of the management strategies of selected industries in Bass Strait.

Source 12.4.6 Evaluation of the management of Bass Strait

Management strategy	Environmental criteria	Economic criteria	Social criteria
Rubbish and nutrient management	• Plastics and other rubbish and toxins from urban areas need to be dealt with • High levels of nutrients lead to algal blooms; better water management and treatment helps to reduce this	• Education programs and rubbish traps to reduce pollution are cheap to implement	• Education programs allow the community to be involved in caring for the environment
Evaluation: Urban pollution has a significant impact on the marine environment. Rubbish traps and education programs are cost-effective and provide opportunities for the community to take action.			
Scallop fishing	• Reduction in the number of boats allowed to harvest scallops • Tight quotas imposed on boats • 'No fish' areas created	• Ban on scallop fishing between December 2005 and May 2009 damaged the industry	• Reduction in the number of boats licensed to fish scallop has created job losses and affected fishing communities
Evaluation: The scallop industry has had to become more sustainable in order to survive in the long term. There have been negative social and economic consequences of the restrictions on the industry, but the restrictions are allowing the scallop population to recover and the industry to rebound.			
Oil and gas industry	• Regulations by NOPSEMA that require environmental assessments • NOPSEMA coordinate responses to spills to minimise impact	• Oil and gas drilling allowed within Bass Strait, providing jobs and economic growth	• Oil and gas drilling brings jobs and contributes to the national economy
Evaluation: The industry provides significant economic benefits and the regulations of NOPSEMA help to minimise the environmental impacts. However, drilling for oil and gas represents a very significant threat to the environment in the case of a spill.			

ACTIVITIES

Remembering and understanding

1. Explain why the waters of Bass Strait are typically so rough.
2. Describe the impact of human activities on the environment of Bass Strait.
3. Outline the sources of pollution in Bass Strait.
4. Describe the causes and impact of algal blooms in Bass Strait.
5. Describe the management strategies used for rescuing plastic pollutants.
6. Explain the potential impact of the Tamar Valley pulp mill on Bass Strait.

Applying and analysing

7. Construct a mind map to summarise the main impacts of human activities on the Bass Strait and the management strategies used to reduce this impact.

Evaluating and creating

8. Using the internet, conduct research into the Tamar Valley pulp mill. Prepare a summary of the current status of the mill.
9. Write a short report outlining how the Bass Strait scallop industry is being managed to make it more sustainable.

Case study: Gulf of Mexico

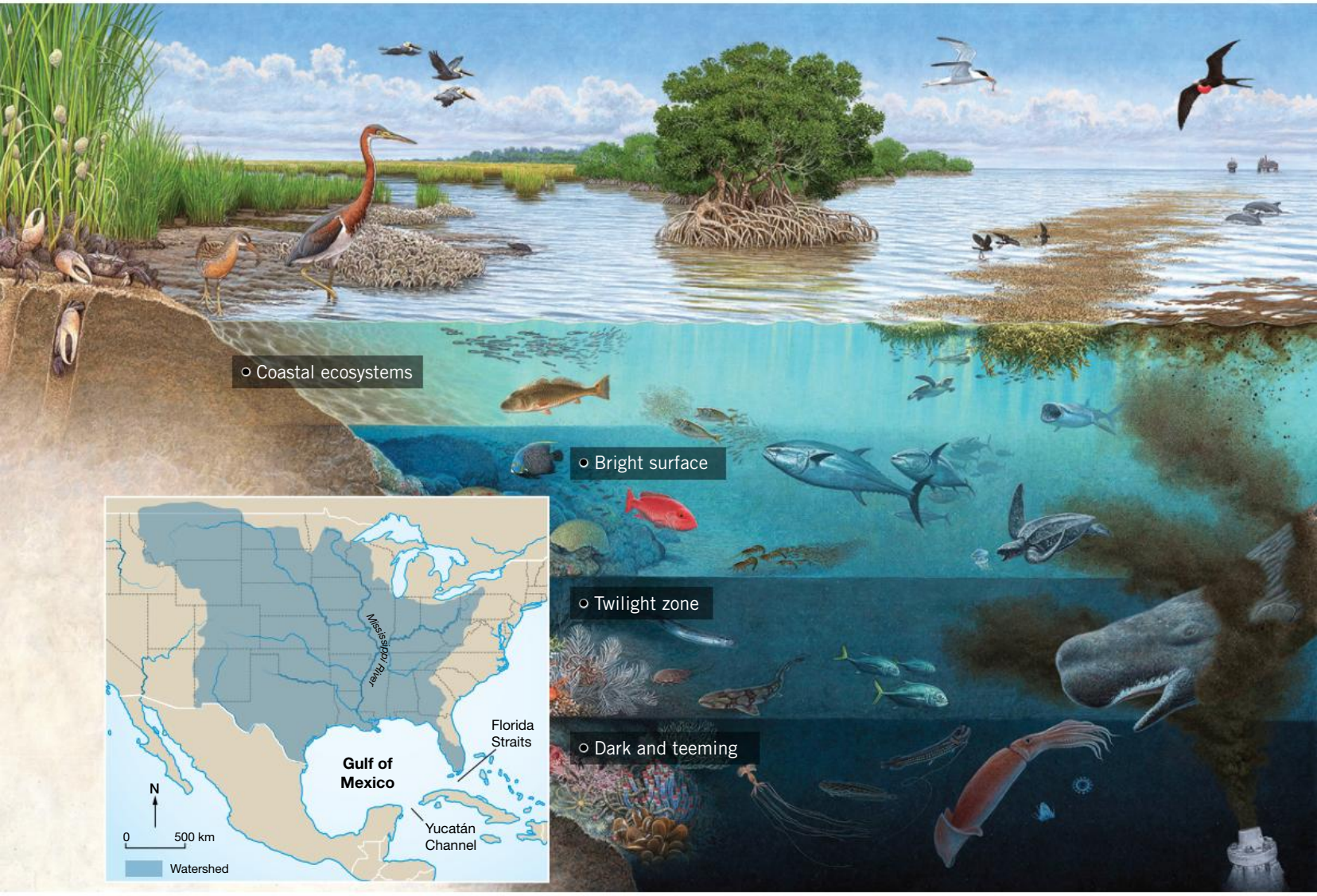
Geography of the Gulf

The Gulf of Mexico's diversity of habitats makes it one of the most ecologically and economically productive bodies of water on earth. It is also one of the most intensively used marine environments. As a result, many of its habitats are threatened.

The Gulf of Mexico is the ninth largest body of water on earth, measuring 1 550 000 square kilometres. Land surrounds much of the Gulf, with only the narrow Florida Straits in the east forming a passage to the Atlantic Ocean, and the Yucatán Channel in the south allowing waters from the very warm Caribbean Sea to enter (see Source 4.5.1, inset).

The Gulf is deep, with waters in the centre plunging to more than 5000 metres. Many large rivers flow into the Gulf, which means that the water closer to the coast is far less saline than the water in the centre. These different water conditions result in diverse environments.

Source 12.5.1 The Gulf of Mexico's watershed (inset map) and coastal and marine habitats



Human impacts

Oil and gas

Human activity has had an enormous impact on the Gulf of Mexico's environment. Deep below the sea floor, huge reserves of oil and gas are being exploited. When accidents occur, oil spills have a dramatic and long-lasting impact on the environment.

DEEPWATER HORIZON

Deepwater Horizon was a huge oil rig owned by UK energy company British Petroleum (BP). On 20 April 2010, while drilling in the Gulf, the rig caught fire after an explosion caused by a build-up of methane gas. The explosion killed 11 crew members and injured 17. On the sea floor, the well head was damaged and it began leaking oil, which spread horizontally at a depth of about 1 kilometre.

As millions of litres of oil spewed into the Gulf of Mexico, killing marine life, BP used Corexit, sprayed on the surface by aircraft, to break up the oil. Corexit is highly toxic and is banned in many parts of the world. It was only after 2 500 000 litres was sprayed that BP was ordered by the US Environmental Protection Agency to stop. By early May, the waters of the northern Gulf of Mexico were so polluted that the National Oceanic and Atmospheric Agency ordered that all commercial and recreational fishing be stopped. It took about three months to stop the leak.

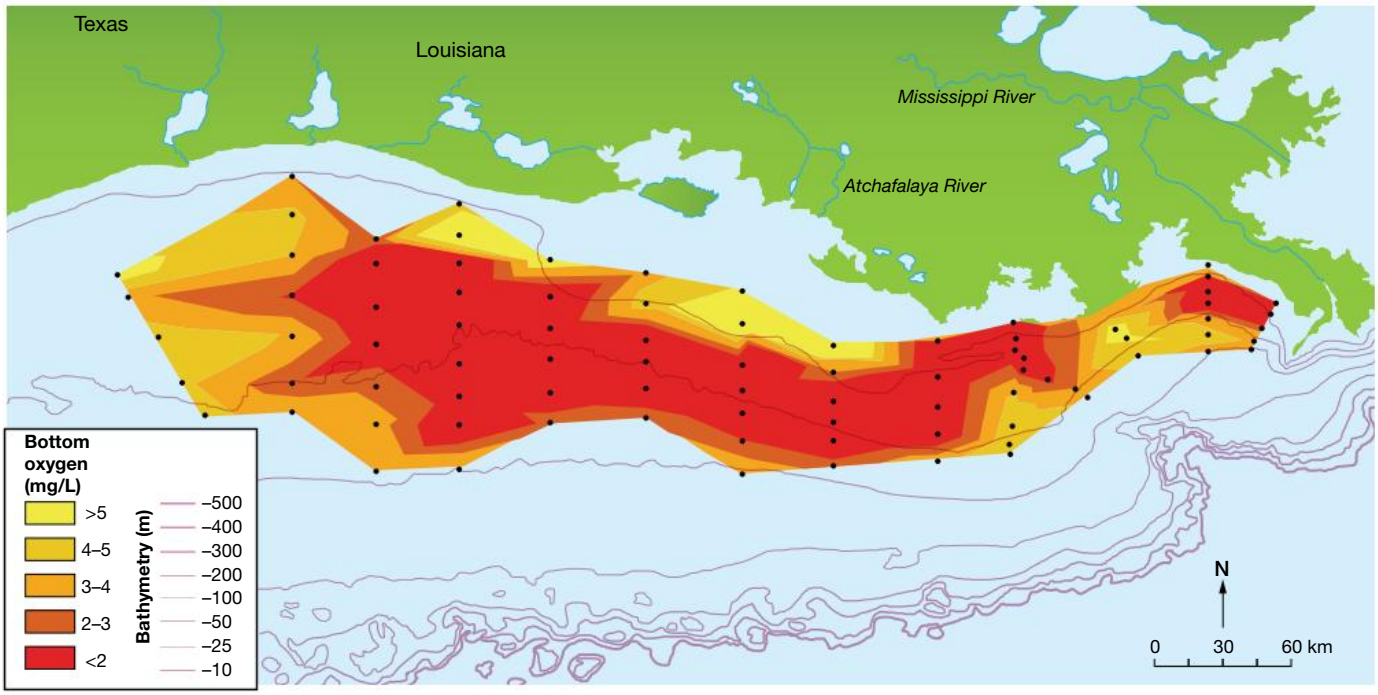
The spill has had a huge impact on the environment. Because the oil leaked at the sea floor, many deep-sea creatures were affected, including deep-water rock reef systems, which have a rich diversity of anemones, sea lilies and whip corals. As the oil rose to the surface, seabirds and surface animals were also affected. The build-up of oil and the toxic Corexit will remain in the Gulf of Mexico environment for decades.

Agriculture

Human activities on land are also taking a significant toll on the Gulf environment. Scientists have discovered an extensive 'dead zone' in the Gulf's marine environment (see Source 12.5.2). The **hypoxic water** in this zone is a result of extremely low levels of oxygen in the water. Located off the coast of Louisiana and Texas, the zone covers an area of more than 20 500 square kilometres. The dead zone appears at the onset of spring, when huge amounts of water flow into the Gulf from the Mississippi River.

The cause of the dead zone is the use of nitrogen-based fertilisers in agriculture, manure from animals and the burning of fossil fuels. About 1.6 million tonnes of nitrogen enters the Gulf of Mexico from the Mississippi River each year from farmland throughout central United States. The excess nutrients promote the growth of algae, which take the oxygen out of the water, leading to the destruction of the food chain.

Source 12.5.2 The Gulf of Mexico dead zone, where dissolved oxygen levels fall below 2 mg/L



Managing the Gulf of Mexico

Management of the Gulf of Mexico presents many challenges. The Gulf is one of the largest bodies of water in the world and is under the control of multiple governments. Its waters contain vast oil and fishing industries that are economically very important. The Gulf coast is home to millions of people, and the waters that flow into the Gulf from the many rivers drain a huge area of land.

Integrated management

In order to manage the Gulf of Mexico effectively, an integrated approach has been adopted. It deals not just with the marine environment but also with the huge landmass that drains into the Gulf. The northern Gulf of Mexico watershed (or water basin) is one of the largest on earth. It is over 5 million square kilometres in area and covers 31 of the 50 states of the United States.

The water that enters the rivers and makes its way into the Gulf of Mexico flows across farmland, urban areas and natural landscapes. This water contains contaminants such as nitrogen-rich fertilisers, which are a major contributor to the Gulf of Mexico 'dead zone'. Environmental management of this issue sometimes takes place thousands of kilometres from the Gulf, and requires integrated approaches from many different agencies, as well as extensive education programs.

In recent years, there has been increasing cooperation between Mexico and the United States in managing the Gulf. The Gulf of Mexico Large Marine Ecosystem Project brings scientists, environmental managers and government officials from both countries to coordinate their management of the Gulf.

The Gulf of Mexico Program

The Gulf of Mexico Program was developed in 1988 by the United States Environmental Protection Authority to provide a coordinated approach to management of the Gulf. The program is based on undertaking

Source 12.5.3 Evaluation of the management of the Gulf of Mexico

Management strategy	Environmental	Economic	Social
Integrated management	• A broad approach, such as the management of watershed, maximises the management of the entire environment	• Strategies help to balance the environmental and economic values of the Gulf	• Programs allow the involvement of community groups and education programs involve individuals
Evaluation: The Gulf of Mexico is so vast it requires management of many different aspects of the environment. It also requires cooperation between many different governments and agencies.			
Fishing industry management	• Reduction in the number of licence buybacks reduce the number of longline boats • Watershed management reduces risks of hypoxia • 'No-fish' areas created	• Watershed management reduces risks of hypoxia, which can devastate the industry • Need to balance the needs of the oil and fishing industries	• Policies to regulate recreational fishing are in place and need to be maintained • Many Gulf communities rely on the fishing industry for employment
Evaluation: The Gulf fishing industry is very significant. Policies are in place to improve the sustainability of the industry. The oil industry represents a significant threat, as does hypoxia. Both of these need constant management and attention.			
Oil and gas industry	• Enhanced regulations requiring tougher environment standards introduced following *Deepwater Horizon* explosion • Scientific research prompted by *Deepwater Horizon* is improving knowledge and reactions to oil spills	• Oil industry adds huge economic growth to the area and provides energy for further economic growth	• Oil and gas drilling brings jobs and contributes to the national economies of the United States and Mexico
Evaluation: The industry provides significant economic benefits. However, as shown by the *Deepwater Horizon* tragedy, the environmental risks are enormous. Better regulations and more research are now in place to manage the industry more effectively.			

extensive scientific research into the problems facing the Gulf and then bringing together many different agencies, volunteers and non-governmental organisations to work together to solve those problems.

The program focuses on five major areas:

- improved water quality
- habitat conservation and restoration
- ecosystem research
- reduced nutrient flows into the Gulf
- environmental education programs.

The program has had important environmental successes. These include substantially improving the water quality of 109 rivers that flow into the Gulf, and developing education centres and programs.

Managing fishing

The US Gulf fishing industry is estimated to be worth more than US$650 million. Shrimp (prawns) are the most important commercial species, with about 80 000 tonnes being removed from US Gulf waters every year.

The Gulf of Mexico fishing industry is under threat from unsustainable fishing, damage from oil spills and the effects of hypoxia. Fishing throughout the Gulf is now regulated and restrictions are placed on the size of catches. Mexican authorities have periodically instituted closed seasons for shrimp fishing. During these seasons, commercial shrimp boats are not allowed to take any shrimp at all, so the population can recover.

There are also concerns over the sustainability of the fishing of other species, including the iconic groupers. There are concerns that grouper numbers are in decline and that longline fishing, a method of fishing using fishing lines with thousands of hooks, creates a huge by-catch.

Management approaches have included extensive scientific research into grouper populations and the impact of fishing. An education program for commercial and recreational fishers, and fish buyers, aims to encourage more sustainable fishing approaches. A licence buyback program has been implemented: licences for longline fishing are bought back from commercial fishers to reduce the boat numbers. These strategies are proving effective and the number of groupers in the Gulf is growing.

Managing the oil industry

The oil and gas industry represents one of the most significant human uses of the Gulf of Mexico. There are about 4000 wells in the US waters of the Gulf, and more in Mexican waters. These operations provide extensive employment and economic development, but they also represent a real and ever-present threat to the environment of the Gulf.

The environmental risks created by oil drilling were dramatically demonstrated by 2010 explosion of the *Deepwater Horizon* rig. The event led to the implementation of new environmental management strategies. The Offshore Drilling Safety Reforms introduced after the explosion require more thorough environmental risk assessments and more thorough planning for oil spills.

There has also been a significant increase in scientific research into oil spills. Government agencies and environmental groups have undertaken studies throughout the Gulf to assess the impact of the *Deepwater Horizon* spill. The Gulf of Mexico Research Initiative (GoMRI) brings together scientists from several universities and non-governmental agencies. GoMRI is now developing better strategies to detect and reduce the impact of oil spills, as well as better remediation strategies for areas affected by oil spills.

ACTIVITIES

Remembering and understanding

1 Define the term ‘hypoxic water’.
2 Outline the causes of the Gulf of Mexico dead zone.
3 Outline the role of the Gulf of Mexico Program.
4 List some of the successes of the Gulf of Mexico Program.
5 Explain why the Gulf of Mexico Large Marine Ecosystem Project is important.
6 Describe the importance of the fishing industry in the Gulf of Mexico to the United States.

Applying and analysing

7 Create a dot-point summary of the impact of the *Deepwater Horizon* disaster on the marine environment.

Evaluating and creating

8 Prepare a short report evaluating the strategies used to manage the Gulf of Mexico more effectively.

Inquiry tasks

Creatures from the deep

The earth's oceans cover 71 per cent of the planet's surface area. Deep oceans, where ocean depths are greater than 200 metres, make up 87 per cent of this. The deep ocean is an environment we know very little about, yet it is critical to all life on earth.

Prepare a five-slide multimedia presentation or equivalent word-processing document with five images of sea creatures from the depths, with some annotations, answering questions such as:

- Where they are found?
- At what depth are they found?
- What special features do they have?
- What do they eat?
- How do they catch their prey?

Collapse of the cod fisheries

The collapse of the cod fisheries in the Atlantic Ocean in the 1980s provides an example of the need for careful management of the marine environment if its use is to be sustainable and viable in the long term.

Cod was once plentiful in Canada, but unsustainable fishing practices decimated cod numbers. In the 1950s, over 227 000 tonnes of cod were caught by smaller fishing vessels using traditional methods. By the 1960s, factory trawler ships from Europe and Asia used enormous nets to capture cod, flatfish, haddock, herring and many other fish. In 1968, the annual catch was over 726 000 tonnes.

This level of catch was unsustainable, and in 1975 the annual catch had declined to 300 000 tonnes. In 1976, Canada and the United States exercised their maritime jurisdiction, expelling European and Asian trawlers from their maritime waters. In 1978, the catch fell to about 139 000 tonnes. In 1984, Canadian factory ships were catching about 250 000 tonnes of cod. This did not give cod the opportunity to spawn, so in 1992 the Canadian Federal Minister of Fisheries and Oceans was forced to impose a ban on fishing the northern cod. By 1995, the cod fishery had completely collapsed, to an annual catch of about 1700 tonnes in the late 1990s and early 2000s.

Your task is to research the history of the cod industry in the Atlantic Ocean and create an annotated timeline. You should begin your timeline in 1497, when the English explorer John Cabot sailed to what is now Newfoundland and was amazed by the plentiful cod in the sea. Your timeline should include the impact of the collapse on the communities reliant on the cod industry, and efforts to bring back the cod.

Source 12.6.1 There are around 4000 oil and gas wells in the US waters of the Gulf of Mexico

Where are the major oil spills located?

Use a blank world map to plot the location of the top 15 oil spills around the world. Key 'global oil spills' into any search engine and select the most appropriate table to work from. Alternatively, find a labelled map of oil spills from which you can do an overlay map of world shipping and transport lanes and then look at the relationship between these lanes and oil spills.

Consider the International Convention for the Prevention of Pollution from Ships, with the added criteria of Prevention of Pollution by Oil. Then do a 'before and after' analysis to see if there has been a marked decrease in the level of this type of pollution of our seas and oceans.

Case studies comparison: Bass Strait and the Gulf of Mexico

The case studies on Bass Strait and the Gulf of Mexico highlight the impacts on the marine environment of three human activities: coastal urban development, fishing, and oil and gas exploration. To compare the two case studies, complete the table below, to show similarities and differences of impacts and management strategies to deal with these issues.

Case studies: Similarities differences

Case Studies	Similarities	Differences
Impacts on Bass Strait and Gulf of Mexico		
Management strategies for Bass Strait and Gulf of Mexico		

After you have completed the table, answer the following questions.

1. In which of the two case studies are the impacts on the marine environment greater? Why?
2. In which of the two case studies are the impacts on the marine environment better managed? Why?
3. Which would be the more difficult job: manager of the Bass Strait region or manager of the Gulf of Mexico region? Why?

GLOSSARY

acidification an increase in the acidity of ocean water as a result of the uptake of carbon dioxide from the atmosphere. An estimated 30–40 per cent of carbon dioxide released by humans into the atmosphere dissolves into oceans, rivers and lakes

atmosphere the blanket of air surrounding earth

by-catch fish caught unintentionally while catching targeted fish species

carbon cycle a series of naturally occurring processes in which carbon is exchanged between organisms and the environment

hypoxic water a water body in which oxygen levels are extremely low

marine debris human-created waste that has deliberately or accidentally been released in a lake, sea, ocean or waterway

thermal expansion the tendency of water (and other matter) to change in volume in response to a change in temperature

CHAPTER 13

Urban environments

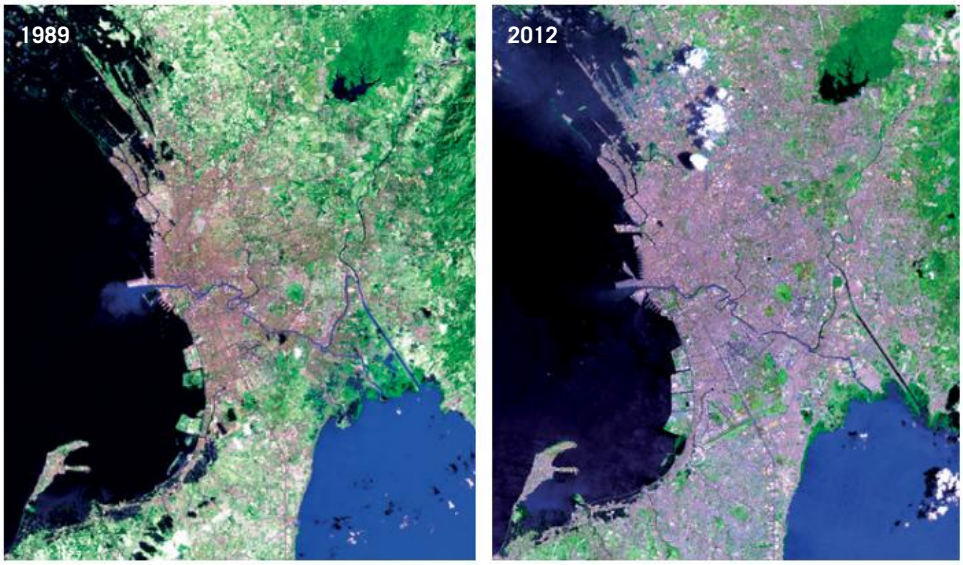
By 2008, half of the world's population lived in urban areas. By 2050, it is predicted that 64.1 per cent and 85.9 per cent of the populations of the developing and developed world respectively will be living in urban areas. As cities expand, they transform the landscape, replacing the biophysical environment with a largely constructed (or built) environment. Furthermore, the environmental 'footprint' of a city extends well beyond its physical boundaries. Meeting the needs of a growing population, especially their demand for food, results in the expansion of agriculture into areas once dominated by the biophysical environment.

It can be argued, however, that the effects of urbanisation are largely positive for the environment. The birth rate of new urban dwellers falls to replacement rate, and keeps falling. This, over time, reduces environmental pressures resulting from population growth. Also, the movement of people from rural areas reduces the impact of destructive subsistence farming techniques, such as improperly implemented slash-and-burn agriculture.

Source 13.0.1 Chicago, United States of America

UNIT 13.1

Environmental change in urban areas



Source 13.1.1 Satellite image of Manila, Philippines in 1989 and 2012, showing the growth in the urban area

This satellite image uses pseudo-natural colours:

- urban industrial areas; the depth of mauve colour increases with greater density
- healthy growing vegetation (rainforest and mangroves)

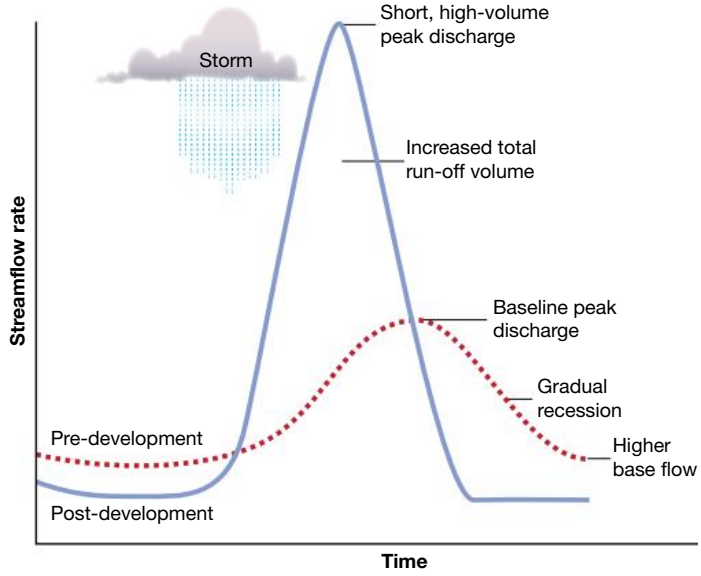
Environmental change

Urban environments are constantly undergoing change. Change can occur when urban environments expand into the surrounding countryside, or are damaged or neglected. Change may also result from significant improvements through processes such as urban renewal. The composition of the urban environment may alter, or people may move throughout the city in different ways.

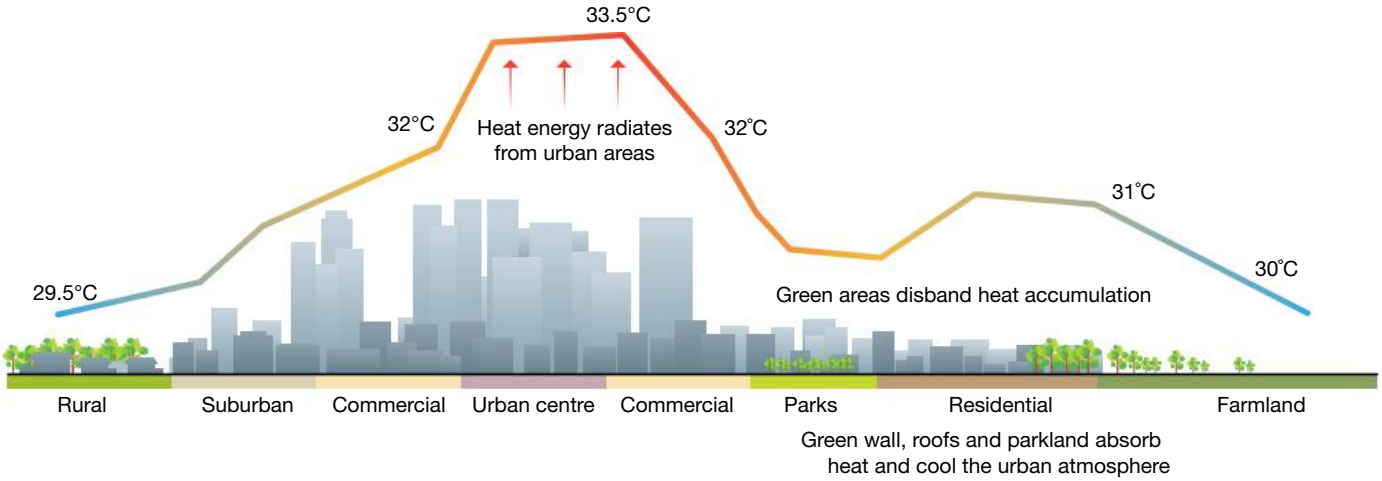
Inevitably, urban development results in environmental change. The best example of this change is the alteration of the land cover from a vegetated to a built surface, as illustrated in the satellite image of Manila, Philippines, in Source 13.1.1. Sometimes, the alteration can involve the conversion of aquatic environments to urban environments. For example, part of the Port of Brisbane is built on land that was once wetlands and waterways. Changes include the loss of significant areas of mangroves and salt marshes, while dredging of the river has removed large seagrass meadows.

In urban places, air quality can be reduced through the release of pollutants such as carbon monoxide. The release of pollutants can also affect the quality of water and soil. Air pollutants can increase the acidity of precipitation, which collects in soil and rivers, changing the acidity of those environments. As vegetated areas are replaced with impervious built and paved areas, infiltration decreases. This results in an increase in run-off, as illustrated in Source 13.1.2. This means that not only is flooding more frequent and more severe, but natural waterways and groundwater in urban environments are also degraded.

In urban places, habitats, both aquatic and terrestrial, become smaller and more vulnerable, while **biodiversity** generally decreases. The nature of the urban surface also affects the microclimate of the city. Source 13.1.3 illustrates the urban heat island effect.



Source 13.1.2 Impacts of urbanisation on stream flow



Source 13.1.3 Urban heat island effect, showing how temperature varies from farmland to the urban centre

Ecosystem functions

The environment of an urban place can be considered in terms of a series of interlinked functions; that is, source, sink, service and **spiritual functions**.

The **source function** refers to the supply of the natural resources of an urban environment, such as soil, water and air.

Urban environments also provide a **sink function**, whereby the environment safely breaks down, recycles or removes pollution such as waste, gas emissions, fertilisers and run-off.

The urban environment may also have a **service function**, such as the rock cycle; photosynthesis; the ozone layer; water filtration by wetlands; and the natural greenhouse effect, by which we are able to have a suitable climate.

The spiritual function of urban environments include those intrinsic recreational, psychological, aesthetic and spiritual benefits gained from the environment.

Changes in urban biodiversity

One of the most significant environmental changes in urban places is the loss of biodiversity. Recognition of the importance of preserving biodiversity in urban environments has increased as research into the impacts of biodiversity loss emerges and the benefits of its preservation are identified.

What is urban biodiversity?

Urban biodiversity is increasingly understood to be more than just the variety of living species. It is now considered to include the diversity of all aspects of nature. This means that biodiversity includes not only plants and animals in the constructed environment but also the patches of land that have survived the city's expansion.

Urban biodiversity includes urban and suburban parks and gardens, as well as remnant vegetation communities such as wetlands, coastal sand dunes and forest stands. Increasingly, urban biodiversity is considered to include private gardens, roadside planting, bio-retention basins and the urban forest. The urban forest refers to all trees and vegetation, regardless of origin, location and ownership. For example, the urban forest includes the trees and shrubs that line streets, grow in public parks or in the suburban backyard.

Biodiversity has value for human populations, providing:

- mitigation of air pollution
- climate amelioration
- noise reduction
- habitat
- places for recreation
- contact with nature
- aesthetic and psychological benefits
- reduction in UV radiation
- temperature moderation
- wind speed moderation
- carbon sequestration
- reduction of flow and nutrients in stormwater.

BIODIVERSITY OF CAPE TOWN, SOUTH AFRICA

The South African city of Cape Town (see Source 13.1.4) lies at the convergence of a number of different soil types and microclimates, and within a major biodiversity hotspot. The city of approximately 2460 square kilometres, has a population of 3.7 million and is increasing by 55 000 people each year. This is placing

Source 13.1.4 Oblique aerial photograph of Cape Town, South Africa

immense pressure on the remnants of biodiversity. The city and and surrounding waters' biodiversity consist of:

- 23 different vegetation types
- 3000 indigenous plant species, 190 of which are **endemic**
- 83 mammal species, including the leopard, hippopotamus and killer whale
- 27 amphibian species
- 57 reptile species
- 361 bird species.

BIODIVERSITY OF SYDNEY HARBOUR

The city of Sydney has developed around a harbour, which is 30 kilometres long and has a surface area of 50 square kilometres. Almost all of the harbour is under tidal influence. At the entrance to the harbour, between North and South Heads, the harbour is 3 kilometres wide and 30 metres deep. This harbour is home to a rich biodiversity, due in part to the variety of aquatic habitats. Over 3000 species are to be found, including 586 fish species, 672 crustacean species, 1375 mollusc species. Many of the species are filter feeders, which are important for keeping the water clear and removing excess nutrients and pollutants. Thus, the biodiversity helps to reduce ecosystem stress and maintain good water quality.

How biodiversity is changing

As urban environments change to accommodate growing numbers of people and changes in their lifestyle, urban biodiversity has, with very few exceptions, decreased significantly.

Measuring biodiversity

Measuring how much biodiversity has been lost is difficult, since urban settlement began well before concerns about the loss of biodiversity and so accurate records have not been kept. To get some idea, within the Melbourne metropolitan area, it is estimated that 18 per cent of the total vegetation remains, with six species thought to be extinct, while there are at least 120 endangered plants and animals. These include the legless lizard, orange-bellied parrot and golden sun moth.

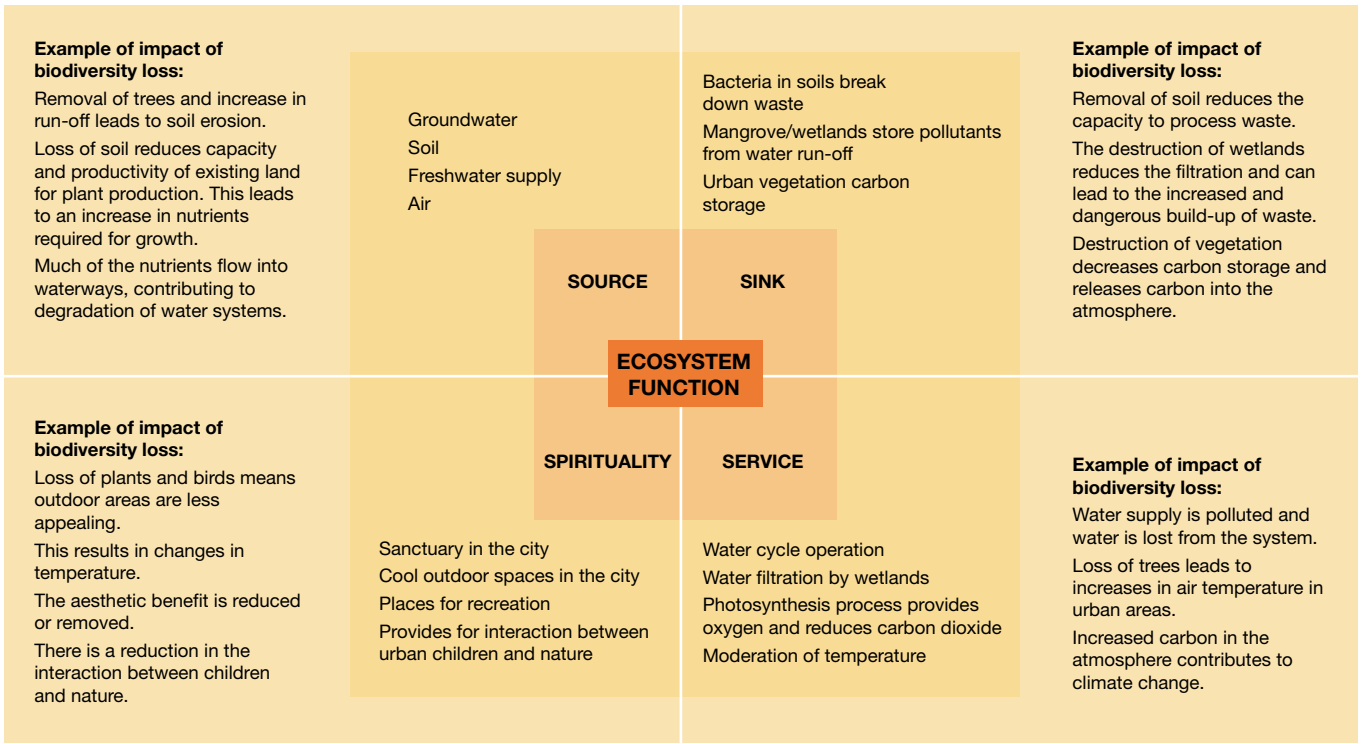
The impact of biodiversity loss

The **sustainability** of the urban environment can be considered in terms of its capacity to provide source, sink, service and spiritual functions. The ways in which each of these functions is affected indicate the impact of changes in biodiversity.

The loss of biodiversity is a detrimental aspect of urban change, to the point that it reduces the sustainability of the natural environment. The significance of this loss of biodiversity on sustainability is demonstrated by a study of the impact on the functions of the urban environment, as described in Source 13.1.5.

Sustainability is about ensuring that the source and services functions are maintained. The filling up of sinks beyond capacity or the depletion of sources results in unsustainability.

Source 13.1.5 Ecosystem functions in an urban environment



ACTIVITIES

Remembering and understanding

1 Describe how urban places cause environmental change.
2 Outline the main ecosystem functions.
3 Outline the benefits of urban biodiversity to humans.

Applying and analysing

4 With reference to ecosystem functioning and Source 13.1.5, analyse the impact of the loss of urban biodiversity.
5 **a** Compare the biodiversity of Cape Town and Sydney using a Venn diagram.
b Are there any similarities? Explain.
6 Study Source 13.1.1 then do the following tasks.
a Study the pattern of urban development in Manila in 1989.
b What was most likely determinant of the pattern evident on the image in 1989?
c How did this pattern change by 2012?
d Describe the changes to vegetated (green) areas between 1989 and 2012.
e Despite the massive urban expansion, not all vegetated areas had disappeared from Manila by 2012. Suggest some possible reasons for this.
7 Study Source 13.1.2 then describe the changes to stream flow rate after development. In your answer, refer to volume and peak discharge.

UNIT 13.2

Biodiversity loss in urban environments

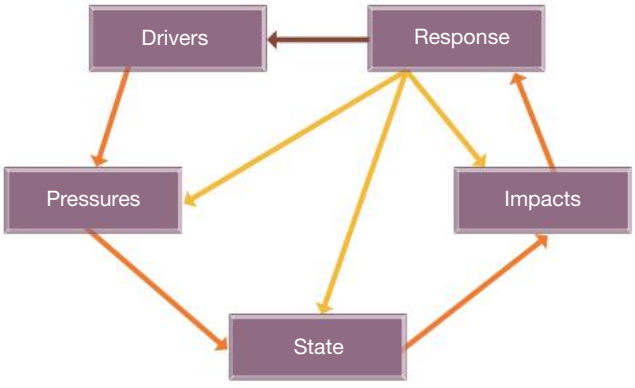
Biodiversity loss

Biodiversity loss in urban environments occurs due to the combination of three main factors: expansion of urban areas, introduced species, and pollution. Although each of these has significant individual impacts, the impacts are magnified when these factors occur in combination.

Environment as a system

A system is a group of interacting objects, materials or processes that form an integrated whole. The environment can be considered as a system. Defining the environment as a system allows us to investigate the impact of changes within the ecosystems. This enables us to focus on the nature of each component of the system and how it interacts with other components.

The environment, including the human activity within it, can be investigated as if it were a system, for example using the DPSIR model shown in Source 13.2.1. Developed by the European Environment Agency, the main focus is on the links between each of the components. The DPSIR model has been adopted by many other organisations, such as the United Nations Environment Programme and the Australian Government's Department of the Environment.



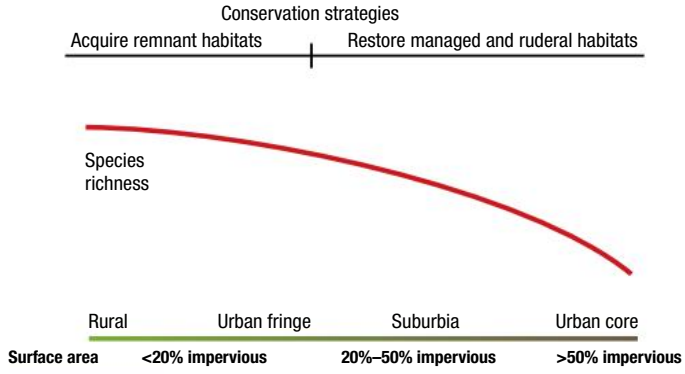
Source 13.2.1 Simplified DPSIR model

The drivers are the social, cultural and economic forces that propel human activity. These result in increases in or mitigation of pressures on the environment. For example, the driver of population growth results in pressures such as production of waste and atmospheric emissions. The pressures directly influence the state of the environment, which is the combination of the physical, chemical and biological conditions such as air and water quality. A change in the state of the environment may affect the quality of ecosystems and the welfare of human beings. These are the 'impacts' referred to in the model. Finally, responses are what society or governments do in order to address the impacts, such as placing strict controls on and monitoring the release of industrial waste into natural waterways.

Expansion of urban areas

Urban growth is responsible for the destruction and fragmentation of the natural environment. Habitat destruction results in the loss of organisms that once inhabited that part of the environment. **Ruderal** or new plant species not native to the area then take over the disturbed habitats. In a broader sense, it also reduces the richness of native species of plants and animals. Source 13.2.2 shows the relationship between the type of species, number of species and distance from the centre of an urban area.

Habitat fragmentation is the transformation of a large and continuous habitat into many smaller, isolated habitats. This can occur due to the construction of roads, housing estates or industrial centres. The impact of fragmentation of habitat is significant; isolated habitats make it more difficult for species to move to different areas, and invasive species can penetrate further into a smaller habitat. Similarly, the fragmentation of habitats reduces the functioning of ecosystems and their services.



Source 13.2.2 A generalised pattern of changes in biodiversity

Introduced species

Human activity in urban areas results in the deliberate or inadvertent introduction of non-native species of plants and animals into the environment. These introduced species are often much better adapted to the urban context than native species. They may kill or successfully compete with the native species.

Pollution

Human activity results in wastes. When the sink environmental function is not able to process this waste effectively, the resultant pollution can have adverse impacts on biodiversity. There are two major types of pollution: air and water. Source 13.2.3 outlines the three main causes of water pollution and the impacts on biodiversity.

Impact of biodiversity loss

The loss of biodiversity has many consequences for both the natural environment and human society.

Consequences for ecosystem services

The reduction of biodiversity reduces soil formation and protection. This decreases the capacity of soil to decompose harmful waste, as well as its ability to act as a carbon sink.

Source 13.2.3 Causes of pollution and their impact on biodiversity

Cause of pollution	Impact on biodiversity
Toxic discharge	Dangerous chemicals may be released into the soil or water. This can weaken or even kill plants and animals. These chemicals include pesticides used in horticulture and arsenic contamination. Pesticides may enter soil and water in concentrated amounts through run-off.
Bacterial contamination	Bacteria enter the environment from leaking sewers and overflowing septic tanks, and are removed from the urban landscape by water run-off into stormwater pipes that discharge into waterways. Animals as well as humans may contract diseases from these bacteria.
Nutrient build-up	Nutrients, especially phosphorus and nitrogen, may be discharged into rivers, causing eutrophication. The nutrient-rich water encourages the rapid growth of algae and aquatic plants. Some of these release toxic substances into the water. When the amounts of plant and algae in the water become too high, the oxygen and carbon dioxide properties of the water change, making it an unsuitable habitat for many aquatic plants and animals.

Source 13.2.4 India has some of the worst air pollution in the world and a haze can often be seen in the sky as in this image of Delhi, India. Major causes of air pollution in India include crop burning and vehicle emissions.

Source 13.2.5 A bee village or apiary on a rooftop at Melbourne's Federation Square

The loss of insect and bird pollinators, such as bees and honeyeaters, has consequences for a variety of urban ecosystem services. Pollination has been found to affect food production, the regulation of hydrology and climate, and even soil formation. For instance, the pollination of fruit plants is required for the production of fruit. Source 13.2.5 shows an apiary on a rooftop at Melbourne's Federation Square. It is one of over forty rooftop bee villages in Melbourne's CBD and inner-city suburbs. The aim of urban bee keeping is not just to collect honey, but also to promote pollination—it is estimated that 65 per cent of all the food we eat is dependent on honey-bee pollination.

Consequences for human society

Biodiversity loss can have specific social and economic impacts on humans. The removal of large vegetated areas reduces the capacity of the urban environment to store carbon. This loss of biodiversity, in some cases, reduces the opportunities that 'urbanites' have to interact with nature.

In addition, the process of burning the vegetated areas releases carbon into the atmosphere. This is believed to contribute to climate change.

WATERWAY DEGRADATION

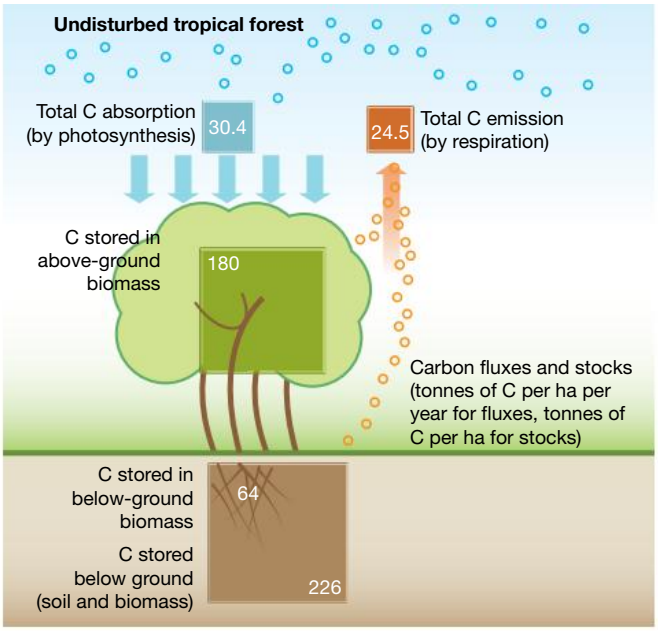
Biodiversity loss, such as the removal of vegetation that provides water filtration, can make water resources more polluted and more turbid. This has the potential to reduce fish breeding sites and thereby result in an economic loss to local fishing industries.

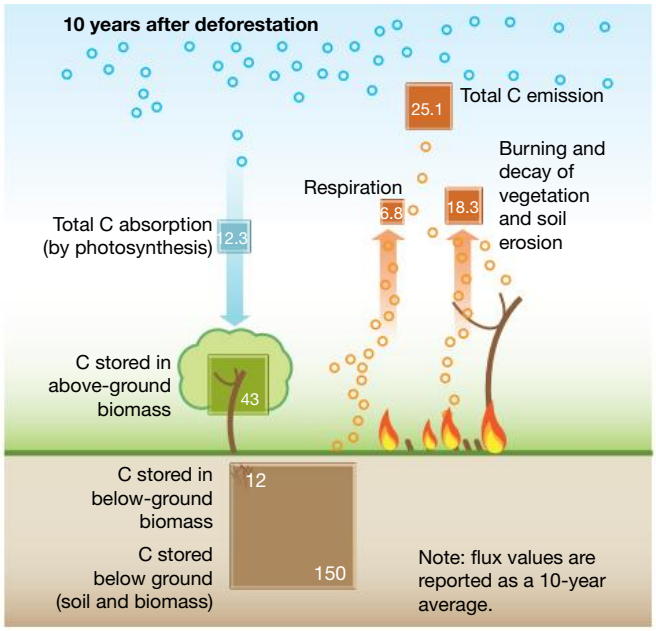
ECONOMIC IMPACTS

Unconverted wetlands, or wetlands that have not been significantly altered by human activity, have an economic value. For example, the That Luang Marsh, located on the eastern edge of Vientiane (Laos) supports livelihoods based on agriculture and fishing by providing services such as flood prevention and water purification. Estimates of the value of this wetland take into account the market price of goods; the cost of services such as water purification, if provided by industry; and the cost of preventing damage to property. Excluding cultural and aesthetic values, a study in 2004 found the marsh to be worth US$5 million annually. In a less developed nation, this is a significant recurring amount.

THE CARBON CYCLE

Source 13.2.6 shows the impact of deforestation on the carbon cycle; in an undisturbed state the forest is a carbon sink and this cycle is destroyed by deforestation. In an undisturbed forest the carbon flux ratio (the calculation of the annual net difference between carbon respiration and storage) is neutral. The process of removing and burning vegetated areas alters the carbon flux ratio and it is believed that this contributes to climate change.





Source 13.2.6 Impact of deforestation on the carbon cycle

ACTIVITIES

Remembering and understanding

1 Outline the causes of urban biodiversity loss.
2 Discuss the environmental, economic and social impacts of the loss of wetlands.

Applying and analysing

3 Study Source 13.2.1. Redraw the diagram of DPSIR to apply to your own local area. Identify the drivers, pressures and states based on your own understanding. Predict the impacts and suggest appropriate responses.
4 Study Source 13.2.2 then do the following tasks.
   a Describe the trend in species richness from rural to the urban core.
   b Account for this trend in terms of the causes of biodiversity loss.
5 Study Source 13.2.6 then do the following tasks.
   a Describe how carbon is stored in a disturbed tropical forest.
   b Identify three key changes to carbon storage as a result of deforestation.

Managing urban biodiversity

Organisations managing urban diversity

Managing urban biodiversity is the responsibility of all those with an interest in the sustainability of urban areas. Urban environments may be managed with a view to protecting biodiversity in a variety of ways. There are some common approaches among many very complex management plans.

International

The United Nations has taken the lead in the initiation of programs to protect diversity. In 1993, 168 countries signed the Convention on Biological Diversity. In 2010, the countries that had signed the agreement met in Japan to produce a revised and updated plan for biodiversity. The plan committed signatory countries to reducing biodiversity loss by 2020. This is known as the Strategic Plan for Biodiversity 2011–20.

Other groups that protect diversity include:

- the United Nations Environment Programme (UNDP), which launched the Global Partnership on Cities and Biodiversity in 2008
- the International Council for Local Environmental Initiatives, an association of local governments and government organisations that have made a commitment to sustainable development
- the International Union for Conservation of Nature (IUCN), or the World Conservation Union, which is a composite of many groups. Among their members are over 200 governments, 900 non-government organisations and 11 000 voluntary scientists and experts. Their role is to initiate conservation projects, provide published research and influence government.

National

The Australian Biodiversity Conservation Strategy 2010–20 identifies short-term and long-term actions for the management of biodiversity. The strategy involves all levels of government and sees collaboration as an integral part of successful management. Not only are governments represented, but there is also a strong involvement of community members, Indigenous Australians and business people.

Local

The success of urban biodiversity management lies in the degree to which local communities are consulted and involved in the process. When the local community is not involved in the management, projects with the best of intentions and expertise can still fail. Countless numbers of small groups of volunteers and local residents are involved in a variety of ways to preserve, protect and manage biodiversity.

BARNES COMMON, LONDON

Barnes Common is a 50-hectare site of valuable metropolitan open land in London. The **common** is dissected by numerous roads, paths and a railway. The acid grassland ecosystem, a significant natural feature of the common, is a carpet of fine grasses that grow in acidic soil. The Friends of Barnes Common is a not-for-profit organisation that is concerned about protecting the acid grasslands. Their challenge is to strike a balance between the conflicting uses of the community common—between biodiversity management and the demands for more sporting fields, paths for dog walkers, community vegetable gardens and a cemetery.

URBAN BARCODE PROJECT, NEW YORK

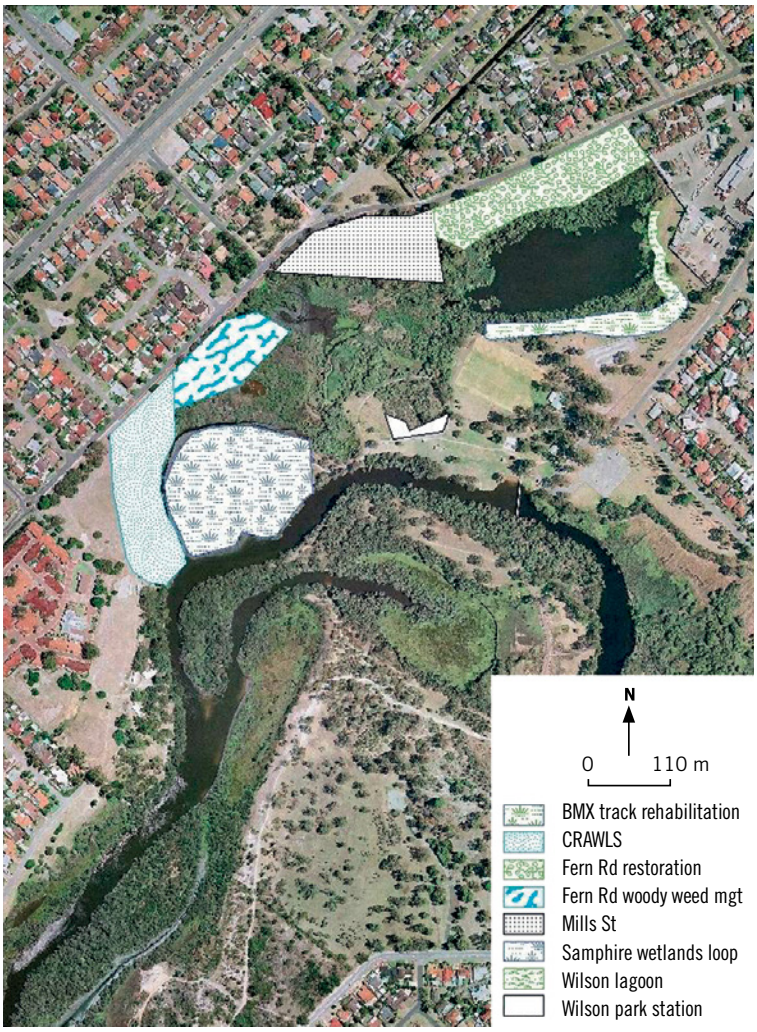
The Urban Barcode Project involves high-school students in New York City. The students explore the city's outdoors and community venues to gather biological samples as part of their own scientific investigations. The students return to a laboratory, and, with the assistance of the Rockefeller University, they extract DNA and match the DNA to known DNA samples. In many cases, new DNA has been identified, increasing the pool of knowledge about New York's urban biodiversity.

PERTH'S URBAN BUSHLANDS

Perth is an urban area with a number of significant sections of relatively undisturbed bushland. Due to the development and change in the urban environment, the urban bushland is constantly at risk from developers, climate change, fire, receding watertables and weed infestation.

The Western Australian Urban Bushland Council is an association of 70 community conservation groups concerned about the decline in urban bushland. It is a voluntary, non-government organisation and lobbies governments for the protection of bushland.

An example of this integration is evident in the Local Biodiversity Program of Perth. A local government initiative, its aim is to support local governments to protect and manage local natural environments. One of the projects is Bush Links, which aims to link efforts of local governments, professional bush regenerators, residents and local school children in local biodiversity conservation projects.



Source 13.3.1 Aerial photograph of Wilson Wetlands in Perth, showing Wilson Wetlands Action Group project sites

Worldviews and biodiversity management

Environmental worldviews influence the management of biodiversity. Source 13.3.2 outlines human-centred, stewardship and earth-centred environmental worldviews in an urban environment.

Human-centred

Management of urban biodiversity serves, first and foremost, the use of urban spaces by humans.

Examples: Sports fields, botanical gardens

Cranbourne Botanical Gardens, Victoria

Stewardship

Management of urban biodiversity serves to balance social, economic and environmental needs, even at the expense of the quality of meeting one of these needs.

Example: Wetlands kept as tourism sites

Roebuck Bay, Western Australia

Earth-centred

Areas of ecosystems are protected and excluded from human access.

Examples: Fenced bird sanctuaries, prohibited islands in urban harbours

A colony of northern gannets on Bonaventure Island, in the Gulf of St Lawrence, Canada

Source 13.3.2 Environmental worldviews on urban biodiversity

Urban biodiversity management

Protecting urban biodiversity is important. A range of strategies are used to protect urban biodiversity. The ability to assess the effectiveness of these strategies is an important skill; it enables biodiversity to be maintained in the most effective and efficient manner.

Strategies used in urban biodiversity management include:

- restoration and revegetation, for example tree planting
- information/education signs, for example community noticeboards
- responsible pet ownership, for example pet curfews
- engaging local residents in projects, for example planting native species
- control of development, for example zoning
- water-sensitive urban design, for example restoration of native vegetation
- addressing introduced species and disease, for example the blackberry plant in Australia
- protection, including legal protection of areas significant for biodiversity.

Conflict in urban biodiversity management

Social and economic conflict

The reality for many urban environments in the world is the perception that immediate economic and social needs outweigh those of biodiversity. To some extent, this is understandable. Population and economic growth result in greater demands for housing and building infrastructure. Infrastructure such as roads, public spaces, water supply and sanitation services, must be provided in growing communities. These place large demands on the natural environment and existing open space. Natural land is transformed into human landscapes, typically with impermeable and vegetation-free surfaces.

Source 13.3.3 An unauthorised settlement on the fringes of the Sanjay Gandhi National Park, India. A leopard killed a five-year-old girl here in July 2012.

MUMBAI, INDIA

The Sanjay Gandhi National Park (SGNP) is one of the largest metropolitan parks in the world. Its dense forest with great diversity of flora and fauna covers 103 square kilometres in the northern part of Mumbai. The park's flora function is as a significant carbon sink, and two lakes provide water for the Indian city.

Since 1990, there has been an acceleration in the construction of illegal dwellings for Mumbai's urban poor. Between 1995 and 1996, 27 hectares were lost as a result of this unchecked urban expansion. In 2003, middle-class environmental activists brought about a court order to evict residents from the SGNP. The residents, 33 000 of whom were legal residents and 24 000 illegal residents, were relocated to a village far away from their homes and places of work.

Transport

In many urban ports, the preservation of harbour biodiversity is difficult. Ships use water as ballast, taking on vast amounts of water, which can include aquatic species, at one location and discharging it at another. This is explored in detail in Chapter 7.

INTRODUCED SPECIES: ZEBRA MUSSELS

The European zebra mussel is believed to have been introduced to the Great Lakes of North America in ships' ballasts, invading the harbours of cities such as Cleveland, Chicago and Toronto. The introduced mussel has a significant impact on the biodiversity of the harbour ecosystem.

The zebra mussel filters about 1 litre of water a day. It consumes food such as microscopic plants and animals, but any material that it takes in is excreted and dies. Thus, it removes large amounts of plants and animals that other small fish would have eaten. As the other fish have less food, their populations decline, which has flow-on effects further up the food chain. Zebra mussels can grow on top of native mussels, reducing their capacity to survive.

Cultural values

Protecting biodiversity is not important in many societies. Consequently, it can be difficult to gain support for biodiversity projects. When biodiversity needs conflict with cultural values, it can be difficult to carry out management strategies to protect biodiversity.

CULTIVATED GARDENS, TOKYO

Cultural values can offer an opportunity, rather than conflict. In Tokyo, 8000 hectares of cultivated land and 14 000 agricultural households supply 680 000 people with vegetables and fruit. Market gardens in urban environments have many social and ecological benefits. Many local farmers continue to farm in traditional ways, growing produce with plants sown over generations. Urban market gardens also reduce pollution and related impacts such as chemical waste. One district, Musashino, set up a local waste management scheme, taking organic domestic waste and using it for farm compost.

Evaluation of biodiversity management

Evaluation is the determination of whether management has achieved its objectives and what accounts for its level of performance. Source 13.3.4 provides a possible set of criteria for evaluating urban biodiversity and lists indicators that allow measurement of the degree to which those criteria have been met.

Evaluating the effectiveness of biodiversity management:

- leads to better management
- assists in effective resource allocation
- promotes accountability and transparency
- helps to involve the community, builds constituency and promotes protected area values.

Measures: Enhances, maintains, minor reduction, major reduction		
Criteria		
Environmental	**Economic**	**Social**
• Diversity of species • Diversity of ecosystems • Ecosystems services • Ecosystem stability • Ecosystem resilience	• Economic profitability of urban area • Ongoing financial support for management • Encourages business activity • Urban place's links with other areas	• Local community • Encourages active interaction between people and biodiversity • Promotes local ownership of urban biodiversity management • Enhances quality of life for local • Considers social justice residents

Source 13.3.4 Criteria for evaluating urban biodiversity management

ACTIVITIES

Remembering and understanding

1 Define the term 'common'.
2 Explain why there is conflict in urban diversity manangement.
3 Describe the impact of the zebra mussel.

Applying and analysing

4 Find an image to represent each of the different types of urban biodiversity management strategies and use them to create a poster for an imaginary council.

Evaluating and creating

5 Analyse the social challenges in managing urban biodiversity in the following scenario:

'A patch of bushland on the fringes of a large city currently provides local residents with many benefits. However, the area is needed for urban expansion and the development of much-needed housing and community facilities. Consequently, the government plans to destroy this bushland in the next year.'

Complete the following tasks:

a List the advantages and disadvantages of such a change.
b Discuss the potential conflict in terms of social, political, economic and environmental factors.
c Suggest how you would manage the situation.

Case study: São Paulo, Brazil

Location

The city of São Paulo lies within the Metropolitan Area of São Paulo (Greater São Paulo), both of which are located within the State of São Paulo, in Brazil. The city is located on a plateau, 800 metres above sea level. The city has been undergoing a transition from a predominantly industrial centre to a major South American commercial, financial and services centre. This transition has encouraged inward migration, which in turn has increased pressures on the city's biodiversity and resources.

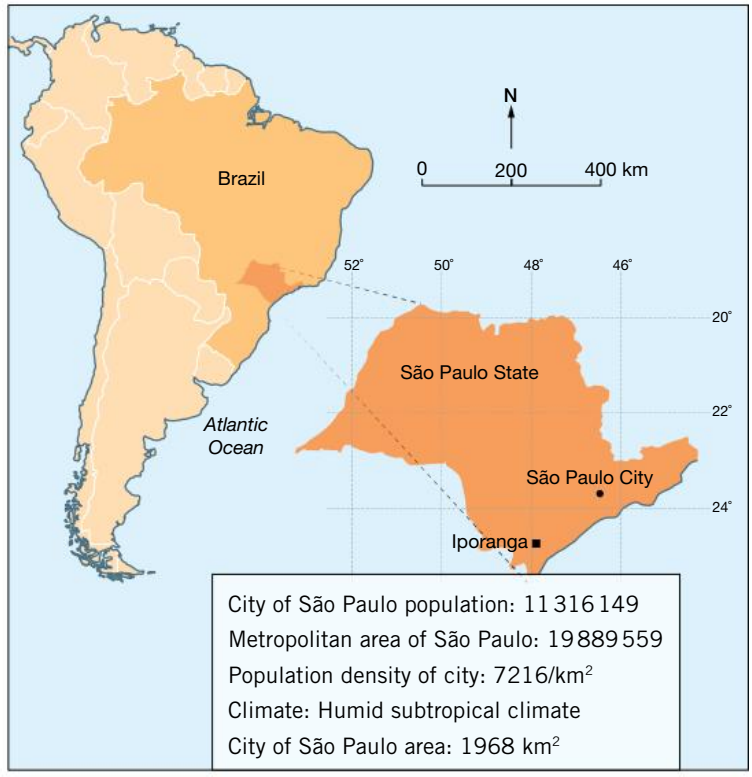
Biodiversity of São Paulo

In the city of São Paulo, action programs have been developed to safeguard the city's biodiversity and increase public awareness about this important natural heritage. São Paulo is one of 21 cities worldwide participating in the project Local Action for Biodiversity, an initiative of Local Governments for Sustainability. The aim in São Paulo is to develop initiatives for the conservation, management and utilisation of urban biodiversity, while taking into account issues such as poverty and sustainable development.

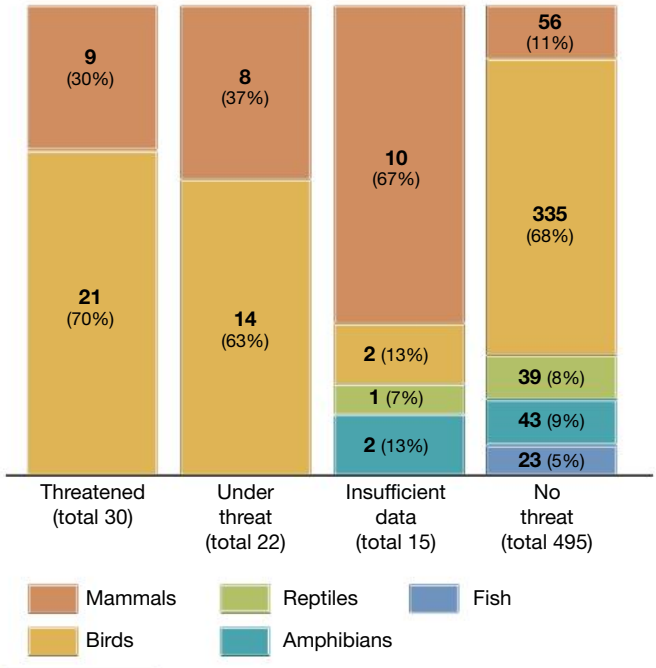
The most significant component of the biodiversity of São Paulo is the Atlantic Forest. There are fragments of this important forest ecosystem throughout the city. These areas have been identified by UNESCO as displaying biological wealth and evolutionary significance, and being among the world's richest and most endangered habitats. The forest has very high endemism, meaning that there are species in the forest that are found nowhere else in the world. Seventy per cent of the tree species, 85 per cent of the primates and 39 per cent of other mammals are found in no other ecosystem. Surveys in the São Paulo have shown that biodiversity is still quite high, despite much human activity. There are:

- 1909 species of flora
- 285 species of birds
- 58 species of mammals
- 37 species of reptiles
- 40 species of amphibians.

Source 13.4.2 outlines the distribution of species of vertebrates in São Paulo, according to the degree of threat.



Source 13.4.1 Location, size, population and climate of São Paulo, Brazil



Source 13.4.2 Biodiversity of the city of São Paulo

Source 13.4.3 Favelas (illegal housing) in São Paulo

Threats to São Paulo biodiversity

Economic and demographic changes in São Paulo have intensified the pressures on natural areas in the city. The expansion of urban areas over a long period of time did not take account of the natural limitations and constraints. The influx of many people and an undersupply of sufficient housing necessitated the illegal expansion of housing into forested areas (see Source 13.4.3). This, even today, results in deforestation, forest burning and poorly built dwellings that release untreated sewage and garbage into waterways. Even when urban expansion or housing development is legal, it has invariably been a disorderly occupation of land, with little consideration given to biodiversity values. This poorly planned development has resulted in many areas of forest fragmentation, as shown in Source 13.4.4.

After the initial destruction of forest for human settlement, there are ongoing pressures on the remaining biodiversity. These include the harming of wildlife by traffic, degradation of soils and hydrology from polluted run-off, illegal trapping of wildlife for the pet trade, invasion by exotic species of plants and animals, and increased erosion of fragile rainforest soils. Many of these pressures have flow-on effects. For example, the increased erosion of soils leads to increased fertiliser use, which may then result in **eutrophication** of waterways. The erosion of soils is also responsible for the siltation of creeks, increased flooding and reduction in the quality of aquatic habitats.

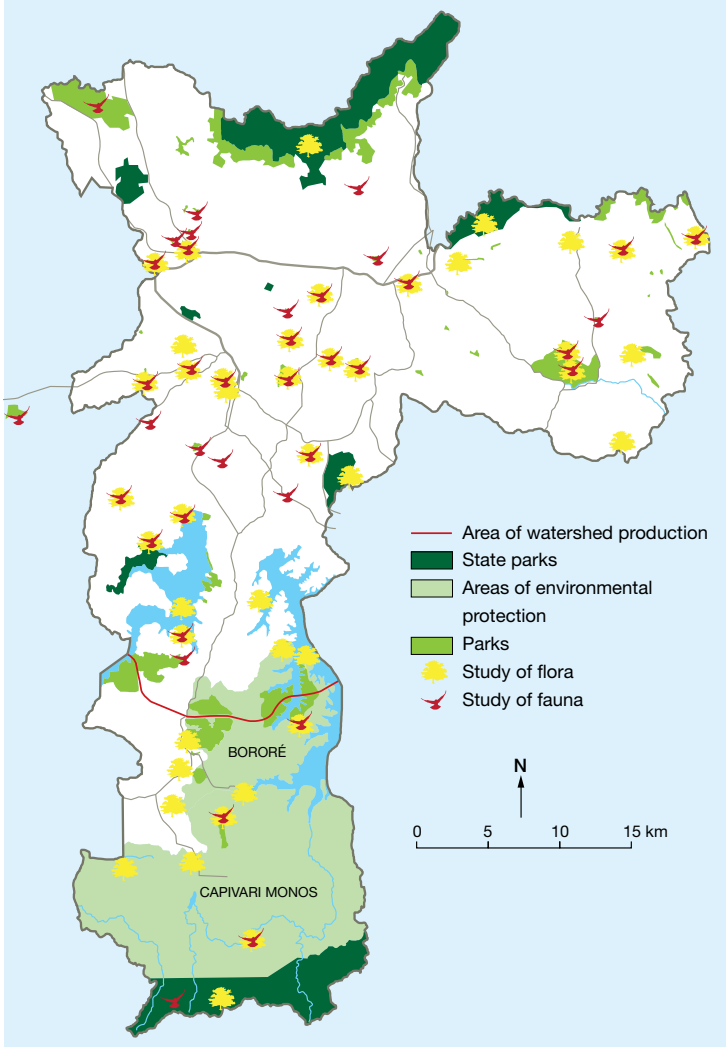
Source 13.4.4 The urban expansion of São Paulo

Management of biodiversity

Although there has been some biodiversity protection for at least a couple of decades, urban biodiversity loss continues. As a result, the city of São Paulo has implemented a number of measures. The Municipal Secretariat for Environment and the Municipal Council on the Environment and Sustainable Development were formed in 1993. They oversee environmental matters such as conservation of biodiversity. A special fund set up in 2001, the special Environment and Sustainable Development Fund, provides financial support to environmental plans, programs and projects.

The Strategic Management Plan 2014

The Strategic Management Plan 2014 is a legal document that regulates urban, economic and social development policies. The 2014 plan focuses on sustainable urban development, such as encouraging public transport use over use of personal cars. In other initiatives of the plan, an area of the city has also been defined as rural, with environmental protections, and funds for the development of parks and green spaces in the city have been allocated.



Source 13.4.5 Public parks and protected areas of São Paulo

Municipal parks

Municipal parks include:

- urban parks accommodating a wide range of activities from leisure to preservation.
- environmental protection areas, of which the city has two. They are areas that contain mostly unmodified natural systems. One is 251 square kilometres in area and the other is 90 square kilometres, and both contain remnants of Atlantic Forest.
- other parks such as state parks, conservation units and municipal nature parks. These are locations identified as containing remnant Atlantic Forest or significant biodiversity.

Municipal environmental police

Established in March 2007, the Municipal Environmental Police Department's 300 guards enforce environmental protection, particularly irregular land occupation.

Inventory of flora and fauna

The fauna inventory began in 1993. Forty-eight areas were surveyed and 432 animal species recorded. In 1998, São Paulo Municipal Herbarium was registered with the Index Herbarium, an international herbarium publication.

Flora management

A tree-planting program was established in 2006 to increase the number of trees in the city, especially in areas with very few. Since the start, 9000 trees have been planted per month.

Wildlife rehabilitation

The Technical Department of Veterinary Medicine and Care for Wild Fauna, established in 1993, provides veterinary care for wild animals in the city of São Paulo. If suitable recovery is made, the animal is returned to its natural habitat in the city.

Operation Defense of the Waters

With the goal of protecting springs, and revitalising creeks and other waterways, this policy addresses impacts caused by irregular housing, slums and waste disposal.

Source 13.4.6 Ibirapuera Park, which was part of the program 100 Parques, includes several species of fish and over 100 species of birds. This park also provides a popular area for leisure, jogging and walking.

ACTIVITIES

Remembering and understanding

1. Describe the biodiversity of São Paulo.
2. State the threats to São Paulo's biodiversity.
3. Outline how the issue of biodiversity loss is being addressed in São Paulo.

Applying and analysing

4. Study Source 13.4.6. Discuss the value of this urban parkland in terms of its benefits to the community and its contribution to biodiversity.

Evaluating and creating

5. Conduct a class debate on the following topic: 'It is easier to manage urban biodiversity in places where biodiversity is extremely high, such as a city in a tropical rainforest, than a city such as São Paulo'.

Inquiry tasks

Evaluating biodiversity management

Protecting biodiversity is important and there are a range of management strategies used to it. However, to maintain biodiversity in the most effective and efficient manner, the results of these strategies needs to be assessed.

Your task is to choose a local biodiversity area to investigate and to evaluate the effectiveness of the biodiversity management strategies being implemented. Present your findings in a report that includes the following sections.

Biodiversity in the local area

Describe the nature and extent of biodiversity in your local area.

Include a map of the local area that shows the following land uses:

- Parks, gardens
- Waterways: rivers, creeks, streams, lakes
- Coasts
- Bushland, forests
- Swamps, estuaries

Your local council websites can usually provide a map or you can use an online digital map service such as Google Maps.

Biodiversity management strategies

Describe the range of strategies used to protect biodiversity in the local area. Types of strategies can include:

- restoration and revegetation
- information/education signs
- responsible pet ownership
- engaging local residents in projects
- control of development
- water-sensitive urban design
- addressing introduced species and diseases
- protection for biodiversity

In your report, include photographs or illustrations of examples of the biodiversity management strategies being used.

Assessment

Assess the effectiveness of each identified biodiversity management strategy. Use the using the criteria in figure 13 as a basis for your evaluation.

Identify the most effective strategy.

Conclusion

If you could, would you make any changes to the way the biodiversity in your local area is being protected? Are there any ways in which biodiversity in your local area could be increased?

Measures: Enhances, maintains, minor reduction, major reduction		
Criteria		
Environmental	**Economic**	**Social**
• Diversity of species • Diversity of ecosystems • Ecosystems services • Ecosystem stability • Ecosystem resilience	• Economic profitability of urban area • Ongoing financial support for management • Encourages business activity • Urban place's links with other areas	• Local community • Encourages active interaction between people and biodiversity • Promotes local ownership of urban biodiversity management • Enhances quality of life for local residents • Considers social justice

Source 13.5.1 Criteria for evaluating urban biodiversity management

Researching biodiversity loss in urban areas

Biodiversity loss in urban environments occurs due to the combination of three main factors: expansion of urban areas, introduced species and pollution. Although each of these has significant individual impacts, the impacts are magnified when these factors occur in combination.

In groups of three, research and develop a case study on biodiversity loss in a major city. Each group member is responsible for explaining one cause of biodiversity loss:

- expansion
- introduced species
- or pollution.

Make sure you include maps and diagrams to illustrate your case study and prepare a conclusion in which you evaluate the causes and impacts of biodiversity loss, drawing on all of your research.

Urban environmentalists

Research information about a group of urban environmentalists or conservationists and complete the following tasks.

Describe the aims of the group and the particular example of biodiversity they would like managed or protected.

Explain the obstacles they face and the nature and source of any conflict with other groups.

Devise a new strategy or project for the urban environmentalists you have researched. Ensure that your idea fits with their values, aims and capabilities.

Favela flow chart

The expansion of urban areas into the forests surrounding São Paulo has provided many migrants and homeless people with a place to live. However, these settlements have also had a significant impact on biodiversity.

Create a flow chart to illustrate the consequences of human settlement on these ecosystems.

GLOSSARY

common in the United Kingdom, an area of public land that is used by the local community

endemic native to a certain place

eutrophication the process by which water bodies receive excess nutrients that stimulate excessive plant growth

biodiversity the variety of all life forms: plants, animals and microorganisms; the genes they contain; the ecosystems of which they form a part; and the processes that link them

habitat fragmentation the transformation of a large and continuous habitat into many smaller, isolated habitats

ruderal a plant species that is first to colonise disturbed lands after a natural event such as a bushfire, or as a consequence of human activity such as road building or abandonment of agriculture land

service function the capacity of an environment to provide the habitat for all living beings, including humans

sink function the capacity of an environment to safely break down, recycle or remove pollution

source function the capacity of an environment to provide the natural resources on which an urban environment depends, such as soil, water and air

spiritual function the capacity of an environment to provide intrinsic recreational, psychological, aesthetic and spiritual beliefs

sustainability using the earth's resources in ways that meet the needs of the present generation without affecting the ability of future generations to meet their needs

CHAPTER 14

Land environments: Forests

Environmental change and land management can be studied using the example of forest environments. Of particular interest are the causes and consequences of the changes taking place and an evaluation of the strategies being used to manage these changes.

Each year, approximately 16 million hectares of forests disappear. Only about 22 per cent of the world's original (old-growth) forest cover remains intact—most of this found is in three large areas: the Canadian and Alaskan boreal forest, the boreal forest of Russia, and the tropical forest of the north-western Amazon Basin.

Forests are cleared, degraded and fragmented by forestry, cleared for agriculture and road building, and destroyed by fire. The exploitation of the earth's forests has been a constant in the human-based transformation of the earth. The transformation of forested lands by human actions represents one of the great forces in global environmental change and one of the principal causes of habitat loss and decline in biodiversity.

Source 14.0.1 Aspens in full autumn colour, Carson National Forest, New Mexico, United States of America

UNIT 14.1

Forests: The biophysical environment

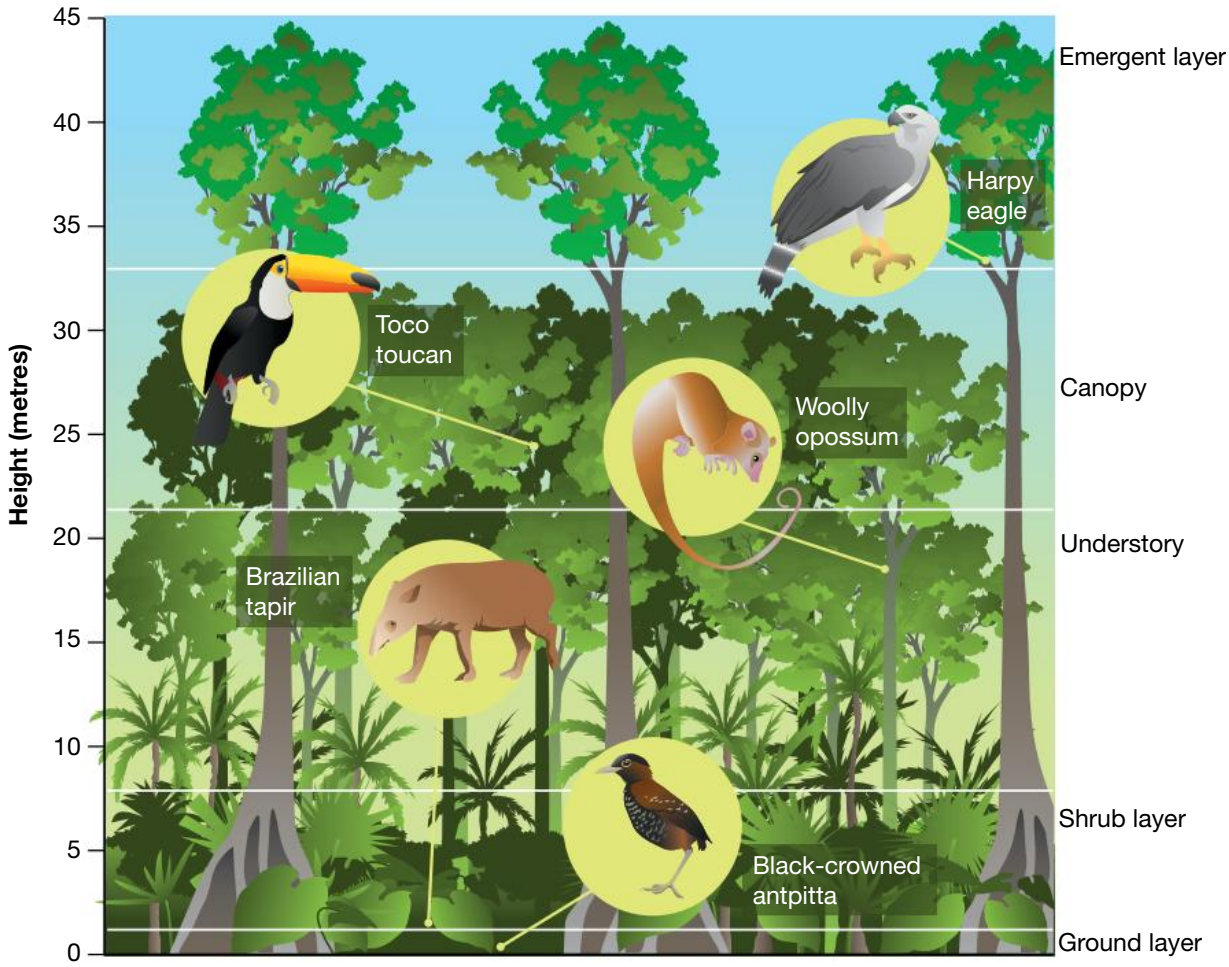
Elements and processes of the biophysical environment

Forests are lands dominated by trees. Within them there are dynamic, relentlessly changing communities of living things interacting with the non-living components of the forest environment.

To be classed as a forest, the trees that make up the forest must be more than 2 metres high and shade more than 20 per cent of the ground. To a person standing on the floor of the forest and looking upwards, more than 20 per cent of the sky would be covered by the foliage of the crowns of the trees.

A typical forest is composed of an **overstory** and an **understory**. The upper tree layer, or canopy, is made up of the crowns of the trees, where the branches and foliage spread to capture light to photosynthesise. Underneath is an understory of smaller plants. In complex forests such as tropical rainforests, the stratification of the forest layers forms five distinct layers, as illustrated in Source 14.1.1. **Emergent trees** tower above the general leaf cover of the canopy, and an understory of smaller trees wait for their chance to fill a gap in the canopy when an old tree dies. Beneath them there are shrubs and ferns suited to the low light conditions, and a ground layer with little vegetation other than fallen leaves, seeds and fruit and decaying organic matter amid the massive roots and trunks of the trees.

Source 14.1.1 also illustrates how rainforest species use the vertical dimension that a forest offers.



Source 14.1.1 Each of the five layers of a tropical rainforest has specialised niches of plant and animal species.

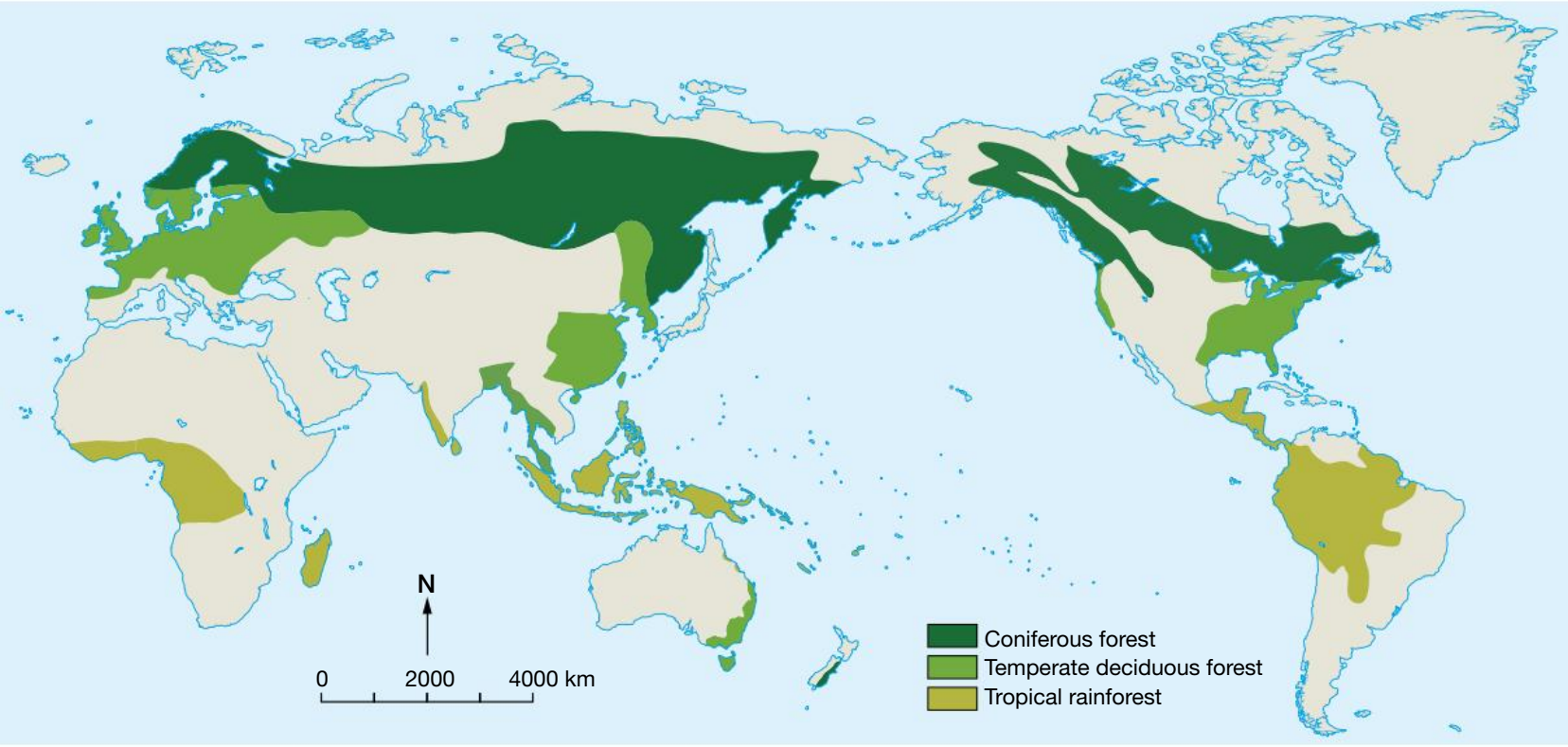
Types of forests

There are many types of forests, and they often merge almost invisibly with one another as the biophysical environment changes. There are three main types of forests: tropical, temperate and cold (northern coniferous, taiga or boreal). Source 14.1.2 shows the location of these forests around the world. Forests are responses to particular combinations of varying temperature and precipitation levels that determine the processes operating within the biophysical environment. Source 14.1.3 (see over) illustrates the main characteristics of and processes in forests.

Did you know?

The total area of the world's forest cover is 4 billion hectares, which represents nearly 30 per cent of the earth's landmass. Approximately 56 per cent of these forests are located in tropical and subtropical areas.

Source 14.1.2 Global location of the main types of forests



a Cold (northern) forest

b Temperate (northern) forest

c Tropical forest

Type of forest	Location	Climate	Characteristics and processes
Tropical rainforests	• From 0° to 10° north and south of the Equator in areas such as the Amazon Basin, Central Africa, Central America, Papua New Guinea and the islands of South-East Asia • Also extend down the east coasts of continents, e.g. Australia, where tropical rainforests are found in northern Queensland.	• Optimal conditions for plant growth as it is constantly hot (24°C to 28°C) and continuously wet (>1500 mm pa). • Climate dominated by the unstable air of the low pressure systems (a product of the intense heating). • Large volume of water readily available to the plants but presents the greatest threat—leaches out soluble nutrients.	• The most luxuriant and dense of all forests. • Dominated by broadleaf evergreen plants that keep their leaves all year, shedding only a few at a time as they become damaged, reducing their ability to capture light. • Trees are draped with vines or lianas that spread their leaves out in the canopy to access sunlight. • Very large **biomass** with immense biodiversity: many species; structurally dominated by trees; possesses many nutrient conserving mechanisms (e.g. drip tips on leaves; mycorrhizal fungi wrapped around plant roots to quickly mop up nutrients in the soil before they are leached out by the excessive water). • The humus soils quickly become impoverished if the living rainforest is removed (as the biomass is the source of nutrients).
Temperate deciduous forests	• Located primarily in the eastern half of the United States, Canada, Europe and parts of Russia, China, and Japan.	• Moderate temperatures that change significantly with the seasons. • Warm summers (20°C to 27°C) and cold winters (5°C to 10°C). • Abundant precipitation evenly distributed throughout the year. • Trees survive winter by going into dormancy by shedding leaves in autumn and replacing them in spring.	• The forest has a simple structure dominated by a few species, e.g. oak, maple, beech. • Most trees have broad leaves that are shed in winter to avoid damage from freezing. • Deep, rich soils enriched by the thick layer of fallen leaves that accumulate in the autumn.
Evergreen coniferous forests	• These cold forests are found just south of the Arctic tundra in a broad belt across the northern regions of North America, Asia and Europe. • They also sit above certain altitudes in the Rocky Mountains and Sierra Nevada of the United States.	• In the subarctic climate, winters are long (only 6 to 8 hours of daylight), dry (cold air holds limited moisture) and extremely cold (< –30°C). • Summers are short and mild (short growing season).	• Dominated by a few species of evergreen conifer trees (cone-bearing) such as spruce, fir, cedar and pine. • The small, needle-leafed, waxy-coated leaves of these trees conserve water at all times, which is vital when the ground is frozen. • The trees are evergreen and as they do not have to grow new needles; when the weather warms they can quickly take advantage of the brief summer. • Plant diversity is low because few species can survive the winter when the soil moisture is frozen. • Thin, nutrient-poor soils have a deep layer of partially decomposed pine needles (because of the low temperatures), which makes the soil acidic and prevents other plants growing on the forest floor. • During the brief summer, the soil also becomes waterlogged in low-lying bogs.

Source 14.1.3 The characteristics and processes of different types of forest environments

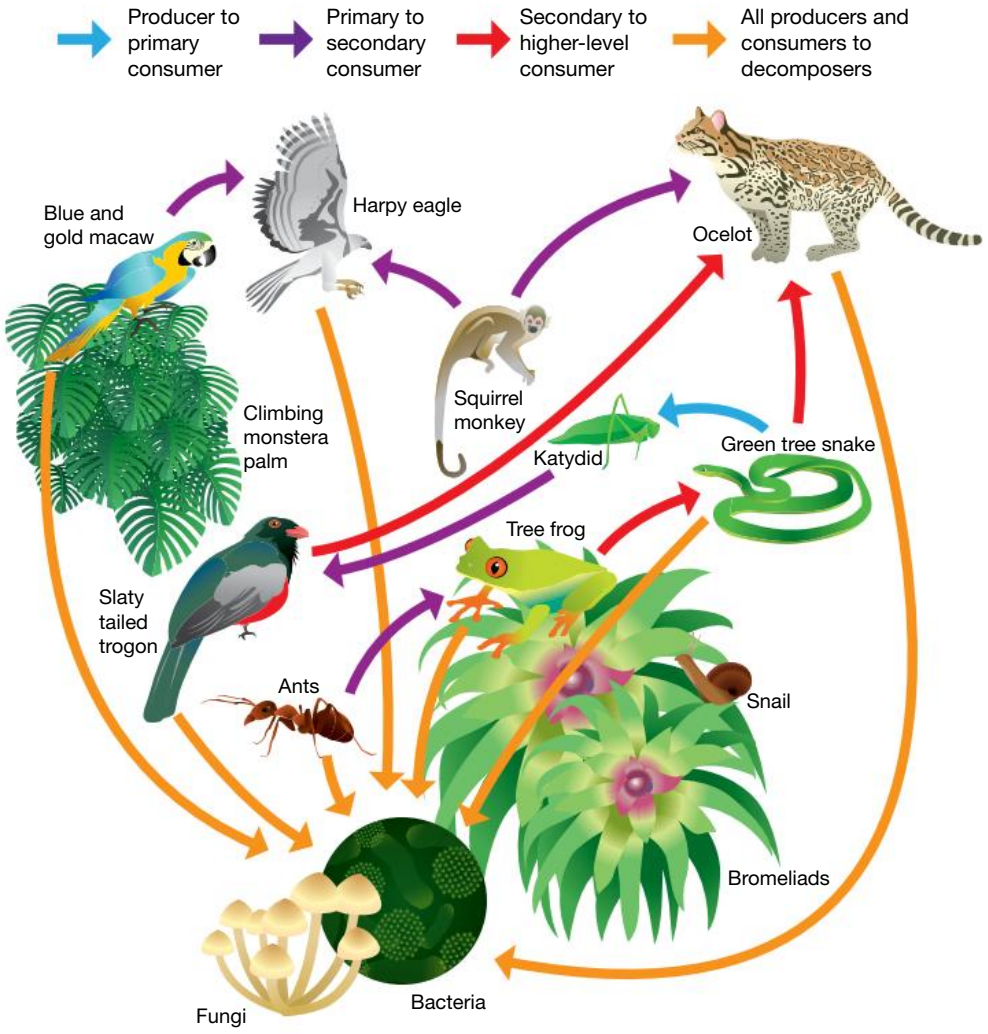
Forest animals

Many of the larger animals of the world's forests are shy and unobtrusive. Quite often the only sign of those that live there may be a distant rustle of undergrowth or leaves as they make their escape. They are, however, fierce predators. The jaguars of the tropical rainforests of Central and South America have an exceptionally powerful bite that pierces the skull of their prey. The Bengal tigers of South-East Asia are well camouflaged in the rainforests by their stripes, which enable them to get very close to their prey. They have even been known to take down elephants.

The most noticeable animals in the forests are those that live among the branches of the trees. Birds, insects, squirrels and monkeys dart and glide from one tree to another, filling the rainforest with their calls and screeches. Yet it is the lives and habits of shyer and smaller creatures out of sight that are vital elements of the forest environment. None are more important than those found in the dark world below ground, where hordes of decomposers rapidly recycle the scarce soil nutrients that support the ongoing growth of the life forms above.

Interactions and natural balances

Forests offer many ways of living for a host of species of plants and animals. As a result, there is an immense biomass and biodiversity within forests. During the long course of evolution, animal and plant species have been shaped by the forest environments of which they are a part. Species, in turn, have had vital roles to play in maintaining natural balances that sustain life within those environments. Source 14.1.4 shows some of the elements of and interactions in a tropical rainforest ecosystem.



Source 14.1.4 The elements of and interactions in a tropical rainforest ecosystem (organisms are not drawn to scale)

Importance of the forest environment

Forests fulfil a major role in supporting the livelihoods and welfare of vast numbers of people in both developed and developing countries. Increasingly, the significance of forests in maintaining natural balances is being recognised. Scientists warn that clearing and degrading the world's remaining forests is a serious global environmental threat.

Economic services

Forests are valued for the economic value of the raw material they provide. More than 1.6 billion people around the world depend on forests for their livelihoods. Harvesting wood is one of the world's major industries; over half of the wood removed from the world's forests is used for fuelwood in cooking and heating, and the remainder is used in construction and papermaking. Global trade in non-wood forest products such as fruit, medicinal plants, fibre, gums and resins has recently been estimated at approximately US$11 billion per year.

Ecological services

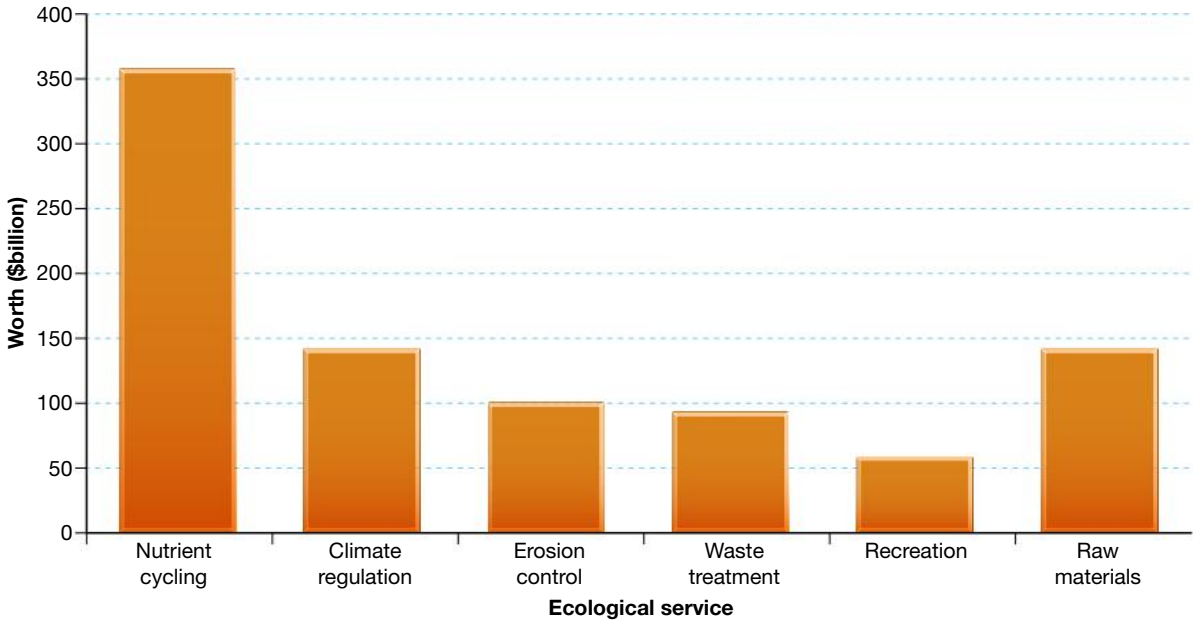
Forests are of immense importance in sustaining life on earth. They:

- support energy flow and nutrient cycling
- provide natural habitat
- promote biodiversity
- reduce soil erosion and protect water catchments by holding the soil in place
- absorb and release water, and aid in flood control
- purify water and air
- decompose wastes
- store atmospheric carbon
- produce oxygen
- influence the local and regional climate.

Scientists have estimated the value of such ecological services and, as illustrated in Source 14.1.5, it far outweighs the monetary value derived from the raw materials extracted from rainforests.

Spiritual functions

People value forests for many reasons. The social and cultural values of forests are intangible and so cannot be measured in monetary terms, but they can be profoundly important to people's sense of being and belonging. These values define worldviews and shape people's interactions with the natural world around them. Forests 'often bear a deep significance, inspire affection and respect, reinforce cultural identity and are vital for spiritual wellbeing', according to the International Institute for Environment and Development.



Source 14.1.5 Annual global economic values of some ecological services provided by forests, and the value of the raw materials they produce (in billions of dollars). Data from Robert Constanza

Forests are carbon sinks

Forests affect climate change because they influence the amount of carbon dioxide held in the atmosphere. Through photosynthesis, trees remove carbon dioxide from the atmosphere and store it for long periods of time until the trees fall over and rot, or are burnt, when the carbon dioxide goes back into the atmosphere. So living forests act as **carbon sinks** and they help to stabilise average atmospheric temperatures and slow climate change.

Did you know?

The world's forests hold more carbon than the entire atmosphere.

Source 14.1.6 Forests such as this by Bird River, in the Tasmanian Wilderness World Heritage Area, are increasingly important for people to reconnect with nature as urbanisation expands.

ACTIVITIES

Remembering and understanding

1. Identify the main features of a forest environment.
2. Differentiate between the two layers of a typical forest.
3. Describe and account for the variety of plants and animals that live in forests.
4. Outline the economic services provided by forests.
5. Explain how atmospheric carbon becomes stored carbon and why forests are such vital 'carbon sinks'.

Applying and analysing

6. Explain the spiritual values that forests hold for people.
7. Study Source 14.1.5 then answer the following questions.
   - **a** What is the value of raw materials gained from rainforests?
   - **b** What is the combined value of all the other ecological services?
   - **c** If extracting raw materials necessitates deforestation, what is the significance of this graph?

Evaluating and creating

8. Prepare a poster that captures the service, sink and spiritual functions of forest environments.

UNIT 14.2

Causes of environmental change

Humans and forests

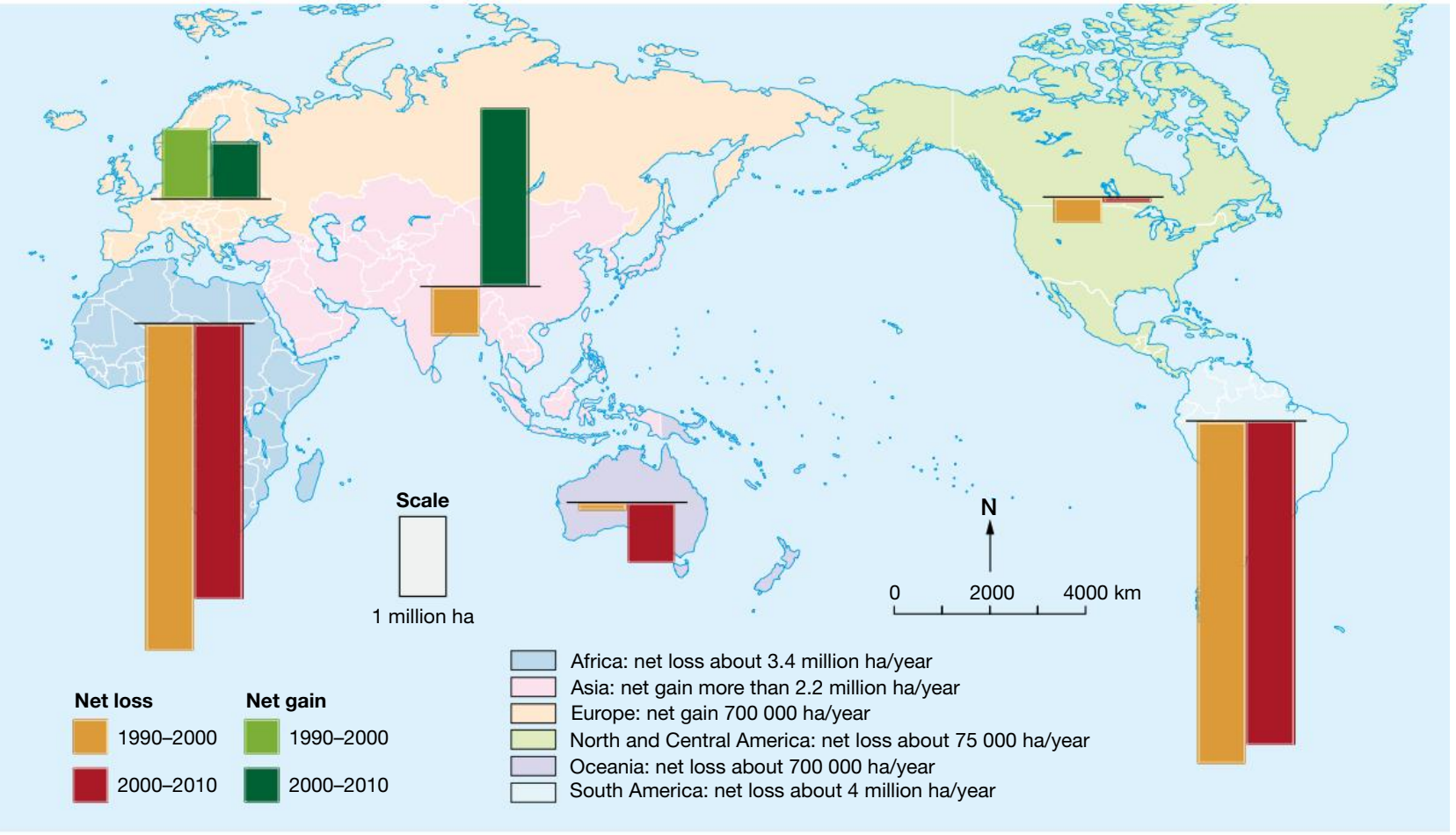
While humans have long considered forests to be special places, the products that they yield, or the ground on which they stand, is often valued above all else. Our ancestors felled trees for fuel and building materials, and cleared forests to grow crops and pastures for their stock. The trees were removed because they were obstacles to farming practices and they captured most of the available sunlight, leaving little for other types of vegetation underneath. Throughout Europe and North America, trees were associated with fertile land, which was highly favoured for agriculture.

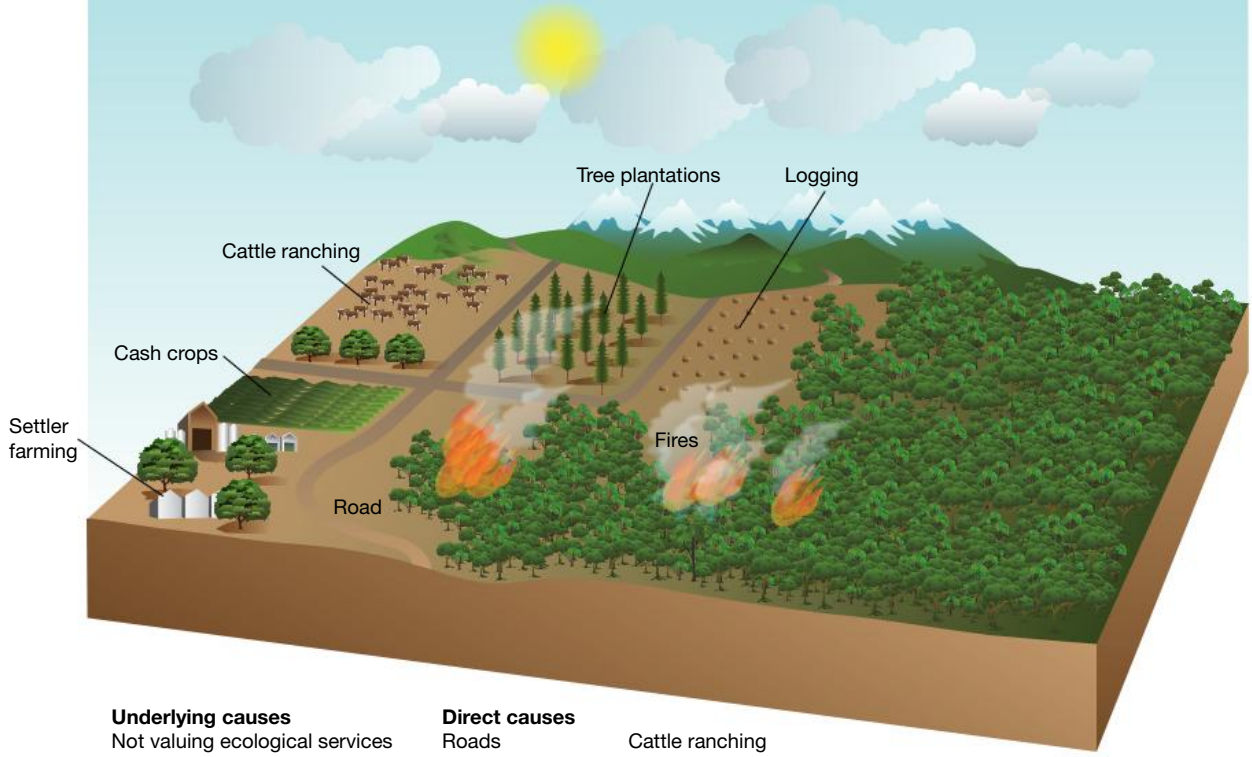
The growth and spread of the world's population has been accompanied by increasing demands for land and forest resources.

With technological advancements, the scale of the extraction of resources and the accompanying environmental change have increased. Axes and crosscut saws have given way to chainsaws and modern electro-hydraulic harvesters, enabling whole slabs of forests to be clear-felled with greater speed. Areas of forest that were once spared because they were inaccessible or on slopes that were too steep are now being exploited.

Forest removal, or **deforestation**, is the most evident of the changes wrought by humans on forest environments. However, there other significant threats to forest environments that directly or indirectly arise from human activities.

Source 14.2.1 Annual change in forest area by region, 1990–2010. Losses are highest in South America and Africa. Australia had significant net losses in the period 2000–10 because of drought and fires. FAO





Underlying causes
Not valuing ecological services
Crop and timber exports
Government policies
Poverty
Population growth

Direct causes
Roads
Fires
Settler farming
Cash crops
Cattle ranching
Logging
Tree plantations

Source 14.2.2 Major causes of the destruction and degradation of tropical forests

Deforestation

Deforestation is the removal of large expanses of trees to provide agricultural land, timber and lumber products, and more recently, for energy and mineral extraction. According to the World Resources Institute (WRI), over the last 8000 years, human activities have reduced the earth's original forest cover by about 46 per cent, with most of the loss occurring in the last 60 years. The WRI estimates that about 40 per cent of the world's remaining intact forests will be logged or converted to other uses within two decades, if not sooner.

Current global concerns about deforestation are mainly about the conversion of tropical forests to agricultural land. Such losses are concentrated in areas of South America, Africa and Indonesia. Rates of deforestation were highest in the 1990s, when 16 million hectares of forest were converted to other uses or lost through natural causes each year. This eased to about 13 million hectares from 2000 to 2010. The rate of deforestation shows signs of decreasing, but it is still alarmingly high in several regions, as is shown in Source 14.2.1.

Deforestation usually begins when a road is cut deep into a forest. This provides access to loggers and their equipment, and also to settlers (see Source 14.2.2). **Clear-cutting**, whereby all the trees are uniformly cut down, is the most efficient way for a logging operation to harvest timber. Foreign companies do much of the logging in tropical rainforests. They are supported by concessions from governments. Once the timber has been removed, the land is sold to ranchers, settlers and plantation owners. Any remaining forests are usually burnt to clear the land. Such burning has been widely used to establish large plantations of soybeans in the Amazon Basin of Brazil and palm oil in Kalimantan and Sumatra in Indonesia.

Acid deposition

Industrial emissions have increased the concentrations of oxides of sulfur and nitrogen within the atmosphere. These combine with atmospheric moisture to yield sulfuric and nitric acids. The acids may then be carried long distances from their source, drifting for thousands of kilometres before they fall on the forest biomass as acid rain, snow or fog, and dry deposits such as soot and ash.

The widespread damage of acid deposition on forests has become evident in recent decades. Most of the forests in Eastern Europe, extending from Poland northward into Scandinavia, have had acid deposition. Many areas in south-eastern Canada and the eastern United States have been affected, particularly in the high elevation forests of the Appalachian Mountains, from Maine to Georgia, where the forests sit in acidic clouds and fog.

Climate change, fire, disease and insects

Warmer and drier conditions are triggering rapid changes in the forests of North America. As trees are weakened by a lack of water, they succumb to the ravages of diseases such as needle blight and intense insect attacks such as beetle infestations. Milder winters favour the survival of these invasive species, which multiply and kill more trees. The combination of drier forests and dead trees also increases the frequency and intensity of forest fires. As a result, millions of trees are being lost and the landscape is changing as tree species migrate (see Source 14.2.3).

Biophysical processes changing forests

Forest environments support an immense biomass and rich biodiversity. Such great assemblages of flora and fauna are a product of 400 million years of evolution. Over this time, natural change has been evident, but as it was gradual, species had time to adjust, and balances were restored. Current concerns about the impact of humans on forests, notably with climate change, are that it is happening too fast for nature to keep up with, and mass extinctions may result.

The productivity and complexity of the different forest environments reflect the biophysical processes supporting them. Human action, whether intentional or inadvertent, can disturb these and even sever important links.

Nutrient cycling in the Amazon Basin

The luxuriant growth of the rainforest is not a product of rich soils underneath. Rather, the rainforest supports itself by quickly and efficiently recycling the products of its own decay from debris that falls to the forest floor. This is especially important with the voluminous, almost daily downpours of rain that would otherwise leach the nutrients out of the soil and carry them away. A whole range of **adaptive management mechanisms** help retain nutrients.

The impact of deforestation and subsequent farming in the Amazon Basin is evident when the soil becomes unproductive and impoverished within a matter of years. Once the biomass of the forest has gone, the source of nutrients for the soil disappears too. As the crops are harvested and consumed, little is returned to the soil. The problem is compounded when the heavy rain washes away the topsoil, leaving a clay-rich subsoil to bake in the hot tropical sun, forming a lateritic crust on the ground that is as hard as bricks.

Source 14.2.3 Dead red lodgepole pines in Colorado are indicative of the landscape change underway.

Forest soils changing from acid deposition

Acid deposition does not usually kill trees directly, but it does weaken them by changing the biophysical processes at work in the soil in which the trees stand. The acidic water dissolves the useful minerals the tree depends on and washes them from the soil before the tree roots can use them. It can also activate aluminium in the soil, which also inhibits tree growth.

Consequences of environmental change

Massive forest 'migrations'

A team of scientists from Oregon, Montana and British Columbia have documented huge migrations of tree species across North America. They describe the

change as one that is occurring on a broad landscape level. In some cases, the mechanism of change is fire, or insect attack; in others it is simply drought. Some forests may be replaced by grass savanna or sagebrush desert. In central California, researchers believe that more than half the species now in existence are not be expected to survive in the climate conditions of the future.

Peat fires in Indonesia

In Kalimantan, Indonesia, the peat that once lay protected in boggy soils below the forest dries out when the forests are cleared. Once this peat catches alight, the fires are very difficult to stop. Forest and land fires have caused **transboundary pollution**, with smoke haze over South-East Asia for decades. The indices of air pollution in Singapore, the southern Malaysian peninsula and in other parts of Indonesia reached dangerous levels in 2013 and 2015 (see Source 14.2.4).

Source 14.2.4 Forest and land fires caused choking smog and transboundary haze in South-East Asia in 2013.

ACTIVITIES

Remembering and understanding

1 Define the term 'deforestation'.
2 Compare the rates of deforestation in the 1990s and early 2000s.
3 Explain why acid deposition has damaged forests.
4 Identify the major causes of landscape changes in the forests of North America.

Applying and analysing

5 Explain why humans must be included in any investigation of environmental change in global forest environments.
6 Study Source 14.2.1 then answer the following questions.
   a What was the approximate net forest loss for South America in 2000–10?
   b What was the approximate net forest loss for Africa in the two decades shown?
   c What was the approximate difference in the net forest loss for Oceania in the two decades shown?

Evaluating and creating

7 Investigate nutrient cycling in a tropical rainforest. Present your findings on a poster annotated with textboxes outlining the nutrient-conserving processes that support the luxuriant forest growth.
8 Investigate deforestation and plantation agriculture in either the Amazon Basin or Kalimantan. Present your findings as a feature newspaper article.

UNIT 14.3

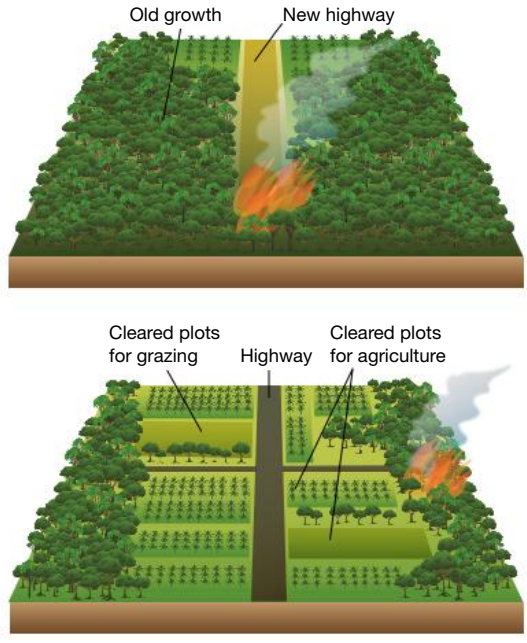
Managing forest environments

People's worldviews and forest management

Human-centred worldviews

Today, many of the world's tropical rainforests support a mixed population of farmers, ranchers, rubber tappers, construction workers, and forestry and plantation workers. These workers and their families often originate from outside the forest. They have a human-centred worldview of the rainforest and see it is as a resource to be exploited.

Poverty is widespread in many tropical areas. Landless settlers gain access to the forest on the roads built by logging or mining companies (see Source 14.3.1). For the most part, these migrants have a human-centred worldview, driven by a desperate need to feed their families. They clear the forest using the slash-and burn method of production, but their practices are highly destructive. Not only are they armed with steel axes and chainsaws, but they also lack the skills of the original forest dwellers. The soil is quickly exhausted, the crops start to fail and the settlers simply clear more land.



Source 14.3.1 Building roads into previously inaccessible forests is the first step to harvesting timber, but it also paves the way for fragmentation, destruction and degradation of forest ecosystems.

As a result, larger and larger areas of forest are cleared, creating large open tracts of land. This makes it harder for the forest to regenerate, as seeding trees are too distant from the cleared plots. Slash-and-burn agriculture is now the main cause of deforestation in Central and South America and Africa, and the second-most significant cause in Asia after plantation agriculture.

Stewardship worldviews

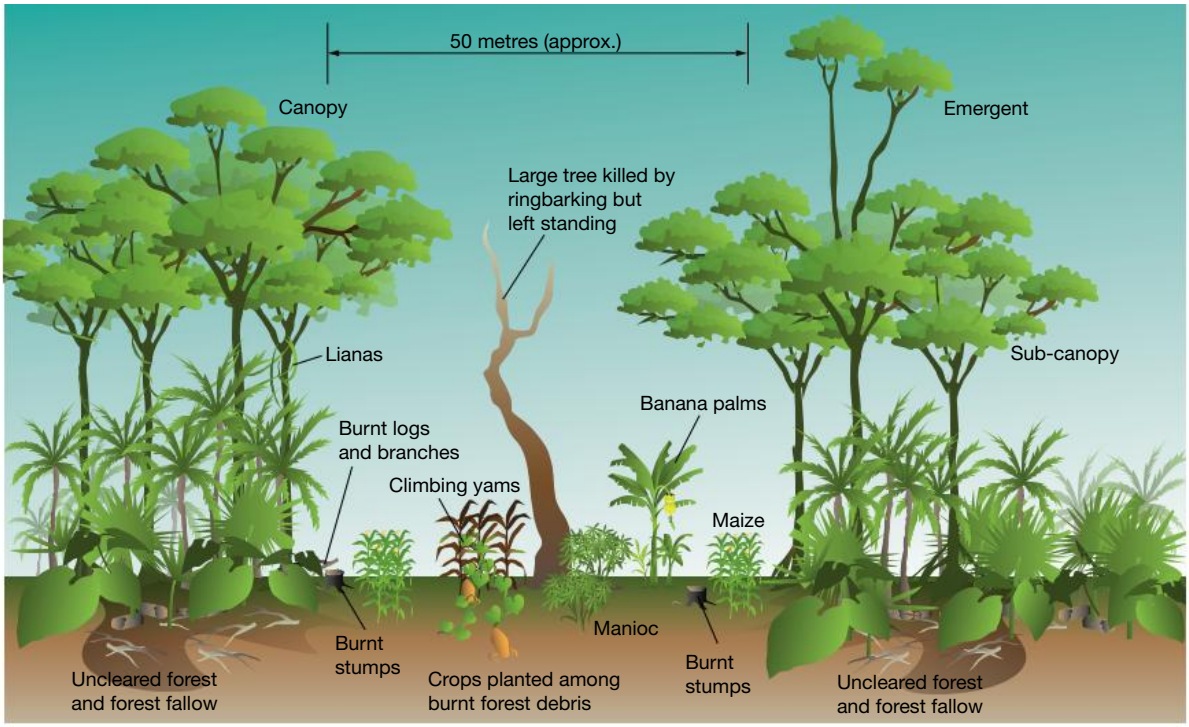
The first people to make a living within rainforests were probably **hunter-gatherers**, who ranged over huge territories in search of food. They had the ability to identify thousands of different types of plants and animals, and to recognise those that were edible or dangerous. The low population densities of tribes guarded against over-exploitation.

Early forest dwellers were also farmers. Traditional **shifting cultivators** cleared small patches of forest to grow food in gardens. Once a site was chosen, fruits and anything useful were harvested before the trees were ringbarked and the undergrowth hacked. When the undergrowth had dried out it was burnt to create a layer of ash that temporarily fertilised the soil (see Source 14.3.2).

Initially, the yields from the garden plot were satisfactory, but they fell as the nutrients were used up and weeds invaded the garden. A plot would provide only a few good harvests before it was abandoned to be reclaimed by the forest. It could take up to 30 years for the site to regain its soil fertility and be ready for use again. Increasing population densities have inevitably resulted in increasing deforestation and made shifting cultivation unsustainable.

Earth-centred worldview

The first priority of the earth-centred worldview is the protection and restoration of forest ecosystems and their related species. Forest ecosystems are considered to be the most ancient ecosystems on earth and they hold immense biodiversity that must be valued and maintained. With the threats associated with climate change, the role of forests as global carbon sinks is considered especially important for the future. Recognising the natural values of forests is considered essential.



Source 14.3.2 Cross-section of the typical garden of a shifting cultivator

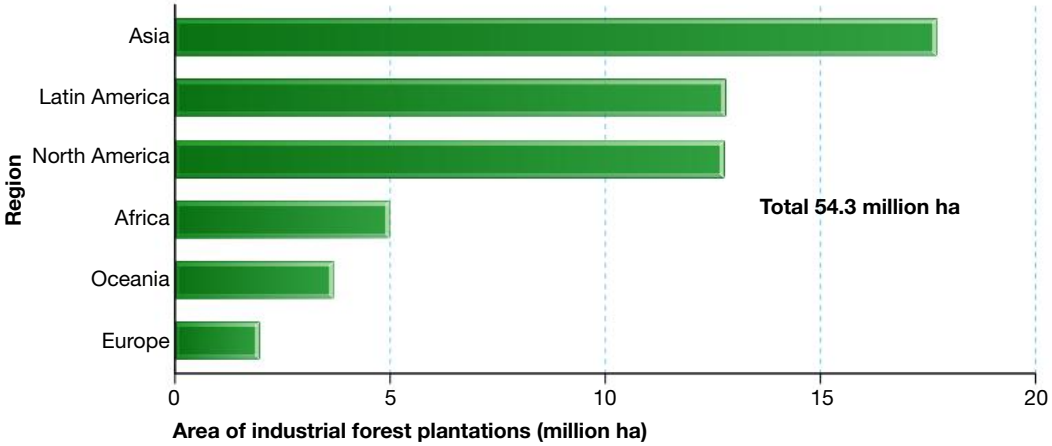
Human-environment systems thinking

The framework of the human-environment systems thinking can help us to identify the drivers of deforestation.

Globalisation

Global markets consume rainforest products such as hardwood timber, latex, natural oils and resins, fruit, nuts and spices, and compounds used in pharmaceuticals. The most important forest resource in economic terms is timber, used in construction and furniture, and for fibre for the pulp and paper industry. Fifty years ago, almost all industrial wood was harvested from natural forests, generally in the industrialised countries in the temperate regions of the Northern Hemisphere.

The globalisation of the timber industry is resulting in the establishment of fast-growing tree plantations in the tropical and subtropical zones in developing countries (see Source 14.3.3). Corporations are investing in plantations in developing countries to take advantage of cheap land and labour. New technologies are being applied to generate rapidly growing trees that have all the desirable traits of industrial wood.



Source 14.3.3 Industrial forest plantations by region, 2012. The global area of industrial, fast-growing plantations is 54.3 million hectares. These forests are intensively managed productive plantations, mainly of exotic introduced species. Indufor Plantation Databank, 2012

Poverty

Population pressure and poverty are major drivers of deforestation. Many people who live in the tropics are desperate to survive in the short term. They attempt to grow food in the forest because it is only there that they can find land. Massive numbers of landless migrants from the poor regions of Brazil's north-east and central-west were encouraged to settle in the new frontier of the Amazon under government land-settlement schemes (see Source 14.3.4).

Conservation reserves and biodiversity corridors

Conservation reserves and **biodiversity corridors** are being established on a range of scales—from small patches of forest, through to large tracts of land to protect the biodiversity of all the flora and fauna.

Conservation reserves

Conservation reserves are areas of land set aside to maintain biodiversity and/or natural or cultural heritage values. They are protected by legislation passed by a government or because of an international agreement that a government is signatory to. Human use of reserves must usually be compatible with its natural values.

Biodiversity corridors

Land clearing has resulted in fragmented forests, with the result that plant and animal species cannot disperse or moving freely across the landscape. Being confined to smaller areas puts species at risk, as they may be weakened by inbreeding and their numbers can be decimated by disease or catastrophic events such as fire. Connectivity corridors link isolated blocks of native forest with strips of vegetation that imitate the structure and diversity of the original forest cover to assist in raising the number and diversity of species.

Source 14.3.4 Poor migrant families have moved into the Amazon and cleared the forest to grow food.

Ecosystem-based management strategies

The ecosystems approach is an **environmental strategy** that integrates the management of land, water and living resources and emphasises that humans are an integral component of ecosystems. It recognises that management must be ecologically sustainable and for this to be assured, biodiversity must be protected, as biodiversity and healthy functioning ecosystems are vital for life on earth (see Source 14.3.5).

Addressing drivers of environmental change

The drivers of environmental change have been identified as globalisation and poverty.

Lowering the demand for wood-based products reduces the pressure on forests. This may be achieved by:

- cutting the wastage of timber resources—in the 1990s, Japan was criticised for using tropical timber panels for moulding concrete in public works projects, only to discard the timber when the concrete had set
- recycling timber—many cabinetmakers and renovators are using recycled timber, as many of the specialty timbers are becoming harder to source, having been over-exploited in the past
- using wood substitutes—considerable potential exists for non-wood fibre alternatives such as cereal straw, hemp and flax to be used as raw materials for board and paper manufacture.

Raising people's standard of living will also take the pressure off forests. This could be done by:

- helping farmers to obtain formal title to their land, so they are encouraged to use it more efficiently rather than move on when soils become depleted
- involving farmers in producing new products from the natural forest that have potential as exports
- improving farming methods and promoting alternative cultivation techniques such as permaculture, whereby the structure of the forest is mimicked. Availability of cheap credit will assist farmers to implement the changes needed.

Source 14.3.5 The twelve principles of the ecosystem approach. FAO

1. The objectives of management of land, water and living resources are a matter of societal choices.
2. Management should be decentralised to the lowest appropriate level.
3. Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.
4. Recognising potential gains from management, there's usually a need to understand and manage the ecosystem in an economic context. Any such ecosystem-management program should:
   - **a** reduce those market distortions that adversely affect biological diversity
   - **b** align incentives to promote biodiversity conservation use
   - **c** internalise costs and benefits in the given ecosystem to the extent feasible.
5. Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach.
6. Ecosystems must be managed within the limits of their functioning.
7. The ecosystem approach should be undertaken at the appropriate spatial and temporal scales.
8. Recognising the varying temporal scales and lag-effects that characterise ecosystem processes, objectives for ecosystem management should be set for the long term.
9. Management must recognise that the change is inevitable.
10. The ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biotechnology.
11. The ecosystem approach should consider all forms of relevant information, including scientific, indigenous and local knowledge, innovations and practices.
12. The ecosystem approach should involve all relevant sectors of society and scientific disciplines.

ACTIVITIES

Remembering and understanding

1. Describe how the hunter-gatherers and traditional shifting cultivators survived in the forest.
2. Outline how forests have been exploited by those with a human-centred worldview.
3. Identify the priorities of those with an earth-centred worldview and their justifications.
4. Explain how both globalisation and poverty are driving deforestation.
5. Explain the benefits of ecosystem-based strategies.

Applying and analysing

6. Analyse how addressing the underlying and immediate cause of environmental change may protect forest landscapes.
7. Study Source 14.3.3 then answer the following questions.
   - **a** What region had the most industrial forest plantations in 2012?
   - **b** How many hectares were occupied by industrial plantations in Central and South America and North America?
   - **c** What percentage of the world's industrial forest plantations were in Africa in 2012?

Evaluating and creating

8. Study Source 14.3.2 then answer the following questions.
   - **a** What crops are grown in the garden?
   - **b** Why are large trees that have been killed by ringbarking left standing and debris left strewn across the garden?
9. Write an extended response on the following topic: 'Explain how a system of agriculture that has worked well for thousands of years in tropical rainforests is breaking down under the pressure of human numbers.'
10. Study Source 14.3.5 and select what you consider to be the three most important principles of the ecosystem approach. Justify your choice.

UNIT 14.4

Evaluating management responses

As both communities and governments tackle the environmental issues confronting them, they have to recognise the importance of monitoring the state of the forests and evaluating the management responses. For such evaluation to be effective, environmental, economic and social criteria must all be applied.

Importance of evaluating management responses

Human wellbeing has long been connected with forests. Concern has been mounting over the threats to forests and the loss of important ecosystem services and renewable resources, species extinction and the reduction of carbon sinks. With only 10 per cent of the world's forests found in protected areas, it is evident the global forest cover is not being adequately conserved.

For too long management responses addressing the threats to forests relied on trial and error. All too often there was inadequate attention given to carefully collecting evidence on what had or had not worked in the past. Such systematic evaluation of management was surprisingly scarce relative to the work undertaken to protect forests.

There is now an increasing awareness of the importance of establishing a measure of what management responses have accomplished, and in doing so learning from past successes and mistakes. This is particularly important given the scale of environmental changes now affecting forests, especially those driven by climate change. Increasingly, monitoring and evaluation are being recognised as essential tools of forest management.

Criteria for evaluation

There are many types of management responses and no single one is appropriate for all environmental changes. Having some vague notion that management will make a difference to environmental quality is not enough. When evaluating the effectiveness and appropriateness of management practices it is important to have a clear set of evaluation criteria.

Environmental criteria

The foundation for forest management is the maintenance or improvement of the condition of the forest environment. This includes the conservation of biodiversity, the maintenance of ecological processes and the protection of all the natural features in the landscape, such as soil, air and water.

Proper forest management will ensure that the countless interrelationships between species that have evolved over time are maintained, and that intricate food chains will continue to enable the energy flows and nutrient cycling that support forests. Environmental criteria are used to judge the extent to which a policy or response meets its intended objectives.

Economic criteria

Planning and implementing management responses requires funding. This may be provided by individual landholders, community groups, governments at all levels (local, state and federal), non-governmental organisations (NGOs) and intergovernmental organisations (IGOs).

Whatever the source, it is important that the management undertaken is:

- ***efficient:*** it achieves its intended objectives or positive outcomes in protecting or improving forest cover
- ***cost-effective:*** it can be done at minimum cost to the landholder or society. Any waste or additional costs because of poor financial decisions can draw a lot of criticism and jeopardise the continuation of environmental programs.

One of the biggest challenges faced by developing countries is their inability to access the funds required to respond to environmental changes. Their governments often find it difficult to raise funds, as many of their people are **subsistence producers** who do not pay taxes.

In recent times, developed nations have faced their own economic dilemmas because national debts have increased as a result of the Global Financial Crisis. Environmental programs are often cut to reduce

government spending. Similarly, donations to NGOs may fall, as individuals become more cautious about parting with their money.

Social criteria

Fairness and equity are important, as success depends on community support. In reality, the costs and other impacts of management responses may not be spread evenly across a country. If they are thought to be inequitable, they will not be supported enthusiastically.

People can be made aware of how conservation and enhancement of forest ecosystems will improve their quality of life both now and in the future (see Source 14.4.1). The extent to which local communities have been empowered to take ownership of the decision-making processes often determines the success or failure of management.

Source 14.4.1 Services provided by healthy forest ecosystems

1 Storage of carbon in trees and soil

2 Pollination of plants/commercial crops

3 Decomposition of wastes

4 Provision of clean drinking water

Trade-offs in decision making

Decision makers must attempt to balance environmental, economic and social criteria in environmental programs, and to determine the extent to which there can be trade-offs between them.

A trade-off is a loss incurred in return for a gain, and is made with an awareness of the consequences. Management that protects the forest may result in financial costs such as lost production or reduced quality of life for the people living there. Similarly, management that ensures a reasonable degree of equity for the people may have to sacrifice efficiency and cost-effectiveness.

For an individual landholder considering revegetating part of their property to create a belt of trees to encourage biodiversity, as shown in Source 14.4.2, the trade-offs might result in the following gains and losses:

- ***gains:*** ecosystem services such as crop pollination, pest control, soil and catchment protection and carbon storage
- ***losses:*** land is taken out of production, thereby reducing the economic returns to the landholder. Costs are also incurred in purchasing tree seedlings and fencing off the area to keep stock out that may otherwise trample the seedlings.

The landholder has to weigh up short-term costs, which are mainly financial, against long-term environmental benefits that may guarantee the sustainability of production, both ecologically and economically.

Such choices about trade-offs must be made at every level of decision-making. National governments and IGOs must debate the practical and ethical dilemmas of balancing conservation with human wellbeing.

Source 14.4.2 A landholder undertook revegetation of part of his property by creating a belt of trees. They were prepared to take land out of production for ecological benefits in the long term.

Improving the evaluation framework

Properly conducted evaluations enable more effective decision-making in managing forest landscapes. Increasingly, scientific research and monitoring are being recognised as essential tools for effective evaluation and strategy adjustment (see Source 14.4.3). Research into the functioning of forest ecosystems and the interconnections within them helps managers to gauge the impact of their actions, both immediate and in the future. Research provides specific information about such processes, and monitoring shows if changes are occurring over time.

The forests of Kosciuszko National Park

Kosciuszko National Park is renowned for its snow-covered alpine area where the climate is too cold for trees to grow. However, there are significant areas of forest at lower elevations within the park. In the steep country that falls away to the west, cool temperate rainforests are found in sheltered pockets, with drier sclerophyll forests on the lower slopes. Below the alpine area to the east, the snow gums of subalpine woodlands give way to expanses of tall forests of mountain gums and alpine ash.

Source 14.4.3 Scientific research and monitoring are essential evaluation tools.

In the 2006 Plan of Management for Kosciuszko National Park, the importance of monitoring, evaluation and reporting was emphasised (see Source 14.4.4):

> ***Monitoring and evaluation are being recognised as essential components of park management. While research provides specific information on the park's values, monitoring is aimed at capturing* baseline data*, typically on the condition of these values, and charting the nature and rate of change in condition over time. When collected and analysed in a systematic way, this information can provide the basis for evaluating the effectiveness of management policies and actions in achieving stated objectives. Adjusting and refining park policies and actions on the basis of monitoring results and the outcomes of performance evaluation produces an adaptive or responsive approach to management.***
>
> ***Existing monitoring programs in the park are primarily directed at detecting changes in alpine and subalpine vegetation communities, populations of certain threatened animals and threatened species, vegetation responses to fire, and water quality.'***

Source 14.4.4 Plan of Management for Kosciuszko National Park 2006. Office of Environment and Heritage New South Wales

ACTIVITIES

Remembering and understanding

1. Identify what are now increasingly regarded as essential tools of forest management.
2. List and explain the criteria for evaluating management strategies.
3. Define a trade-off and outline some of the trade-offs that are made in forest management.
4. Explain why baseline data is important.
5. Explain how an adaptive or responsive approach to management can be achieved.

Evaluating and creating

6. Write a short paragraph discussing the statement: 'Managing environmental change in the world's forests can no longer be left to trial and error'.
7. Undertake a 'think, pair, share' activity to determine the most important evaluation criteria in forest management. What is the consensus of the class? Discuss the relative importance of each criterion and how decision-makers must make trade-offs.

UNIT 14.5

Case study: Australia's east coast forests

Connectivity conservation

Efforts to conserve the remaining forests along Australia's Great Dividing Range provide one model for managing the impacts of environmental change.

Connectivity conservation is based on the idea that a corridor of protected lands extending over hundreds, and in some cases, thousands of kilometres can protect biodiversity and critical ecological processes. Connectivity conservation is based on a number of key ideas.

- Largely intact areas of forests need to be formally conserved in conservation reserves in order to maintain their ecological integrity.
- The land around the reserves can be managed so that it can act as a buffer zone against any outside threats to biodiversity.
- Cleared land provides opportunities for large-scale restoration of natural vegetation to connect the reserves so that they are not left as isolated islands in which extinctions are likely.
- Conservation planning is done on a large scale to ensure that all the links and ecological processes essential for species to adapt to environmental change are in place.

A conservation corridor

A conservation corridor is a strategically located area of land that links key habitats for plants and animals. It may encompass a range of land uses, including agriculture, industry and human settlement, in addition to areas conserved as national parks or reserves.

Great Eastern Ranges corridor

Seven large-scale connectivity conservation areas have been established to protect the integrity and resilience of Australian ecosystems. One of the largest is the Great Eastern Ranges corridor (GER corridor), shown in Source 14.5.1. The GER corridor protects the forest landscape in the mountain ranges that run parallel to the east coast of Australia. The corridor extends from

Source 14.5.1 The slopes of the Great Eastern Ranges include most of Australia's forests. Connectivity conservation is an approach now being used to manage environmental change within these forests.

Did you know?

To ensure the survival, health and resilience of all species—including humans—we need to look at how we can rehabilitate and 'reconnect' islands of vegetation on a large scale, so a mosaic of ecosystems can exist across the landscape and function more effectively.

Connectivity conservation is a holistic approach that uses science to identify where, why and how 'gaps' in the natural vegetation can be restored to provide more functional links in the ecosystem.

the Grampians in western Victoria to the Atherton Tablelands in far north Queensland and beyond, as shown in Source 14.5.2.

Key facts

The Great Eastern Ranges corridor:

- is 3600 kilometres in length
- is 33 000 000 hectares in area
- goes across 14 bioregions
- contains three World Heritage Areas
- has the world's greatest concentration of primitive rainforest flowering plants
- has Australia's largest and tallest old-growth forests
- contains more than 8000 species of plants of which 25 per cent are **endemic**
- contains the headwaters of 63 large rivers
- provides clean water to over 11 000 000 people.

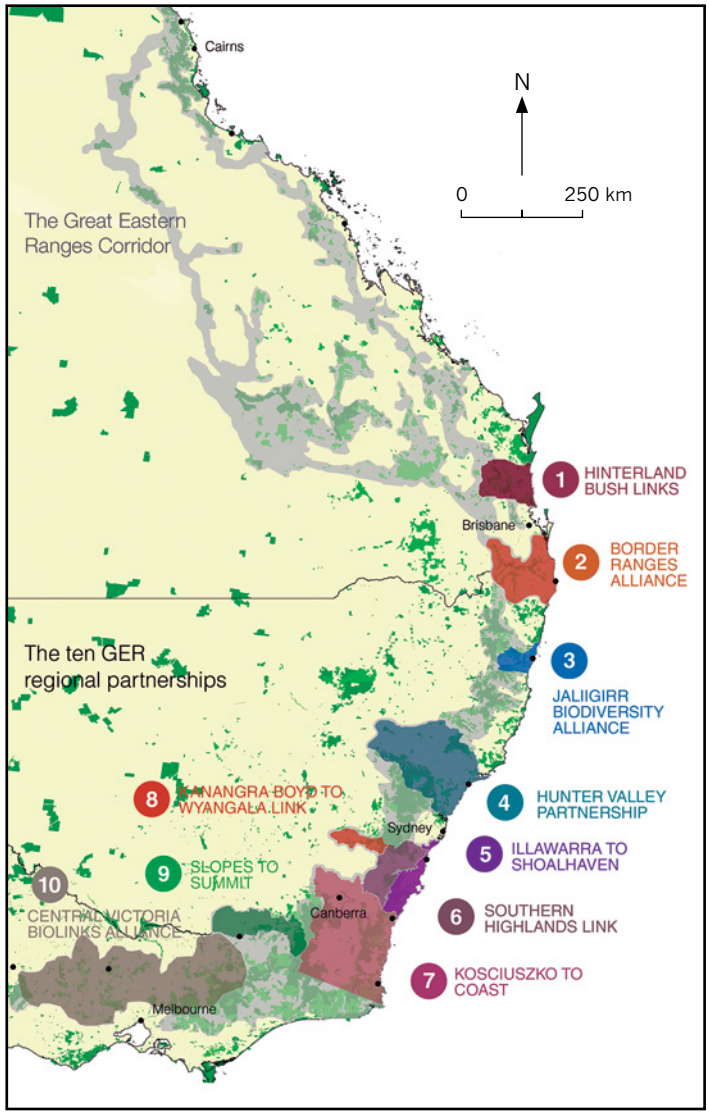
GER corridor's biodiversity assets

The biophysical environment in the GER corridor is one of the most biodiverse on the continent. Stretching over 28 degrees of latitude, the GER corridor includes significant areas of tropical, subtropical and temperate forests. It covers a number of climate zones, with major variations in temperature and rainfall. Along the ranges, tablelands and escarpments are Australia's least fragmented habitats, containing a rich diversity of flora and fauna, all of which have evolved over millions of years.

The three World Heritage areas (Wet Tropics, Central Eastern Rainforest Reserves and the Greater Blue Mountains) found in the GER corridor reflect the continent's evolutionary history. They provide evidence of the impacts of long-term global climate change, the long period of isolation since breaking clear of Antarctica (and Gondwanaland) some 60 million years ago, and adaptations to Australia's deeply weathered and infertile soils. As a result, the region contains ancient and unique species of plants, the origins of which can be traced to Gondwanaland. The Wollemi pine is just one of these. There are many endemic plants and animals.

As the ranges receive high levels of precipitation, they support very productive ecosystems and thus have the largest amounts of biomass on the continent. The GER corridor contains most of Australia's rainforests and eucalypt forests and therefore the bulk of its forest-dependent flora and fauna.

Source 14.5.2 The GER conservation corridor, which includes the Great Escarpment of eastern Australia and the Great Dividing Range and, in various places, large sections of intervening highlands



Threats to biodiversity in the GER corridor

There are a number of environmental changes that threaten the rich biodiversity of the GER corridor:

- ***Land clearing:*** This has been the major contributor to the loss of biodiversity in Australia. The GER corridor is adjacent to the intensive agricultural zone along the east coast, where the major centres of population are also found.
- Habitat loss and fragmentation lead to the demise of species, as they are unable to maintain viable populations within increasingly smaller, disconnected areas.

- ***Invasive species:*** The introduction of feral animals and weeds has had devastating consequences for many native species. Of particular concern is lantana, a shrub that grows along the edges of the forests of the ranges and penetrates any disturbed areas. It forms a dense thicket that excludes any native species from growing beneath.
- ***Fire:*** While Australia's vegetation evolved in the presence of fire, it is susceptible to considerable damage from very severe fires. For tens of thousands of years, there were frequent, low-intensity fires in the forests under traditional Aboriginal management. Since European settlement, fires have been deliberately prevented to protect people and property. As a result, the fuel load has built up in the forests and when fires do occur they can become large wildfires, the intense heat of which does severe ecological damage, even killing trees outright that would normally have regenerated.
- ***Climate change:*** Accelerating climate change is placing even more stress on forests. According to the New South Wales Department of Primary Industries, climate change is likely to increase wildfire risk, largely through its impact on climate extremes. Projections suggest that the frequency of very high and extreme fire danger days in south-eastern Australia may increase by 4–25 per cent by 2020, and by 15–70 per cent by 2050.

Connecting nature

We need a better understanding of the complexity of the networks of interconnected systems within forest environments. The GER corridor initiative recognises that to fully understand a regional biodiversity asset (for example a particular forest), it is necessary to examine the continent-wide ecological processes that sustains it. The GER corridor uses science to identify the gaps in the forest cover and to determine how existing stands can be connected to restore the links and interactions that will protect biodiversity.

The challenge

Although parts of the GER corridor are well protected by national parks and reserves, much of the rich biodiversity is found on private and public lands outside these protected areas. The GER recognises that nature's interconnected systems need to be supported across the whole environment, not just in the protected areas of the landscape. So we seek to integrate conservation efforts in the land adjacent to and interconnecting with the existing reserve systems. This will allow habitats for plants and animals to be managed better or rehabilitated and strengthened where needed.

The approach

The GER is based on 'connectivity conservation', an approach that recognises the need for ecological processes to operate on a much larger scale than previously appreciated. By assessing these processes at local, regional and continental levels and harnessing the existing efforts of many landowners and organisations to respond strategically, we create the best conditions to preserve, restore and build resilience in our environment.

The key is simple—by creating stepping-stones between areas of native vegetation and managing and improving what is already in place, we reconnect to the landscape and improve the health of the environment on which we all depend. This approach will support our biodiversity by providing the best available opportunities for species to survive climate changes.

Source: Great Eastern Ranges Organisation

Connecting people

The GER initiative brings together all the people and organisations working on improving native habitats and protecting biodiversity along the eastern ranges: researchers, landholders, community and Indigenous groups, conservation organisations, local councils and other government bodies. This approach provides a broad range of expertise to draw on and is coordinated and supported by the GER. Such cooperation means that the resources can be put to use to yield the best results on a large, landscape scale.

The approach taken in the GER initiative involves raising awareness about biodiversity conservation over the full extent of the GER corridor. Local communities can be galvanised into action that fits in with the strategic approach to protecting biodiversity in all the forests along the ranges.

Management strategies

The GER initiative is an ambitious plan aimed at combating the threats to the biodiversity and ecosystem services of the forest landscapes of eastern Australia. For over a century, these landscapes have been under pressure from landuse intensification, invasion by introduced species and, more recently, rapid climate change. The GER corridor initiative is a large-scale, continent-wide approach to increasing the extent of forests and ecological connectivity within the landscape. Building such a continental lifeline will conserve biodiversity by supporting the survival of species.

Environmental

Connectivity conservation involves identifying the gaps in forest cover and restoring the natural vegetation as can be seen in Source 14.5.3. Connecting habitats and providing functional links between them is the key to achieving forest sustainability.

Conservation management in Australia has focused on species presence (snapshot data) rather than long-term viability and the need for connectivity conservation. This has been due to insufficient resources (time and talent) to fully implement **population viability** analyses for most corridor initiatives.

Economic

Funding has not matched the scale of the initiative's vision and objectives. Much greater financial resources and human energy are required than have been invested to date in reducing continental scale pressures. One of the challenges for the Australian Government is to create conditions needed to attract greater investment in time, talent and financial capital to match the scale of need in expanding conservation corridor initiatives.

Social

A real strength of the GER initiative is that it is socially inclusive. Local community networks have been involved in regional partnerships and people are working with an appreciation and understanding of how their efforts are contributing to the continental corridor initiative.

The future

Connectivity conservation on a continental scale is the key to providing more functional links within the forest ecosystems and thereby conserving biodiversity. In time, as research advances and funds flow more freely, there will be more progress.

Source 14.5.3 Volunteers in locally organised groups can work within regional partnerships that improve the connectedness and resilience of forest landscapes.

ACTIVITIES

Remembering and understanding

1 Explain how connectivity conservation protects forests.
2 Explain the purpose of the GER initiative.
3 Account for the rich biodiversity within the forests of the GER.
4 Identify the threats to this biodiversity.
5 Define the term 'population viability'.

Applying and analysing

6 The GER provides clean water to over 11 million people. In a paragraph, explain why protecting the forests along the ranges of the GER is vitally important to this role.
7 As a class, debate the effectiveness of the GER initiative.
8 Study the photograph of the GER in Source 14.5.3. What evidence is there of c°nnecting nature in this landscape?

Evaluating and creating

9 Evaluate the GER initiative against environmental, economic and social criteria.

UNIT 14.6

Case study: Yucatán Peninsula, Mexico

Threats to the rainforests

South-eastern Mexico has significant areas of tropical rainforests that have come under threat as agriculture and eco-archaeo-tourism have expanded. The southern Yucatán Peninsula illustrates how these drivers of environmental change are reshaping the forest ecosystems. It also illustrates how vulnerable the remaining tropical rainforests are to such change.

Poverty and population growth

In the late 1960s, the Mexican Government promoted development in the Yucatán by providing land for poor farmers to grow food on communal farms known as *ejidos*, shown in Source 14.6.1. This encouraged landless migrants to move into the region, many of them illegally squatting on the land. The population increased tenfold by the year 2000 to 39 000 people, resulting in extensive clearing of almost 1000 square kilometres of rainforest. The region became one of the global 'hotspots' of tropical deforestation.

Most of the farmers were subsistence producers. They grew corn, beans and squash, or kept livestock to provide food for their families. They also used the forest to hunt and poach animals. By the mid-1990s more than half the farming households were also growing commercial chilli for the national market. Chilli is a very sensitive crop and susceptible to pest, diseases and water shortages. As farmers battled to make money, they intensified their landuse and cultivated the land more frequently. As soil fertility was lost, they cleared more forest to plant chillies.

Invasive species

The increasing number of *ejidos* in the region led to the fragmentation of the forest landscape, making it more vulnerable. As the forest became fragmented, more forest edges were created. Fires used to clear the land destroy near-edge trees and the rainforest became more exposed to the severe winds of hurricanes. As trees fell, they took with them the tangle of clinging vines and lianas, creating more gaps within the forest. Bracken fern invaded the open tracts of land and quickly covered the area. This invasive species blocked forest regeneration by preventing other plants from growing.

Source 14.6.1 Forests have become fragmented as the land has been cleared for *ejidos*.

Large-scale burning to clear land for farming also accelerated the spread of bracken fern across disturbed land. Once it became established, the land was lost to cropping and rather than combat the spread of the fern, farmers just cleared more rainforest.

Increasing numbers of tourists

Tourism increased as the southern Yucatán Peninsula gained international recognition for its ancient Mayan ruins. The popularity of this cultural heritage and archaeological sites necessitated the construction of tourism-related infrastructure. Roads, including a paved federal highway, were cut through the rainforest to provide access to the ruins. This caused significant loss of rainforest habitat. Increasing numbers of tourists have also led to water shortages in the dry season (November to April). Most of the water is reserved for tourists, creating a shortage in the local *ejidos*.

Revaluing the region

In the late 1980s, Mexico determined to realise the economic value of the region's forests and archaeological heritage. In doing so, the government established the Calakmul Biosphere Reserve (CBR), El Mundo Maya (EMM) and the Mesoamerican

Biological Corridor program (MBC). Efforts have since been made to reconcile the different interests of the main stakeholders in the region.

Calakmul Biosphere Reserve

Covering more than 7231 square kilometres, the CBR was established in the centre of the southern Yucatán Peninsula to protect the immense biodiversity found within the rainforest (see Source 14.6.2). There are also many ancient Mayan ruins within the limits of the reserve. Mexico currently has 40 **biosphere reserves**.

The CBR is noted for its small but healthy population of jaguars, as well as other big cats such as ocelots and pumas. It also has howler and spider monkeys, tapirs, toucans, parrots and over 400 species of butterflies. In all, the CBR has 86 different species of mammals, many of which are rare, threatened or in danger of extinction.

In 1993, the CBR was recognised by UNESCO as a biosphere reserve and became part of an international network of sites. The CBR has three functions:

- conservation of the mature forest cover, its species and genetic diversity, and its carbon stock (stored carbon)
- appropriate development that is both socially and economically sustainable to protect the livelihoods of the people living there, as well as the environment
- monitoring and research to track the state of the rainforest and understand how it functions.

Biosphere reserve zones

Biosphere reserves are organised into three interrelated zones:

- a core area, which is legally protected to conserve biodiversity; it is carefully monitored to track environmental change
- a buffer zone, which surrounds the core area and provides for scientific research and experimentation, education and training as well as tourism
- a transition area beyond the buffer zone, where local communities have a hand in managing the resources of the area through farming and agroforestry.

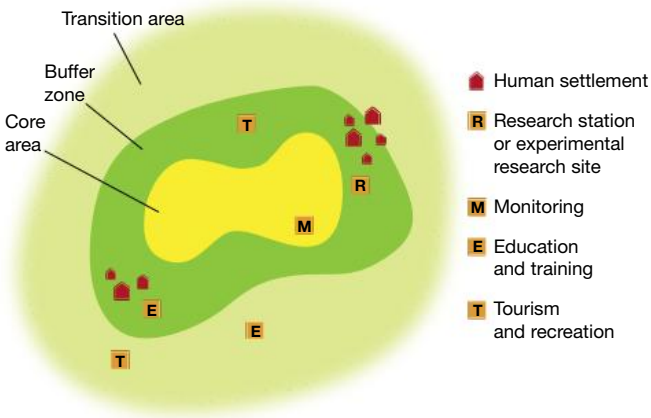
In 2014, UNESCO approved the extension of the CBR and the area is now recognised as an important 'mixed natural and cultural property'.

The guiding principle of biosphere reserves is that the local community is not displaced, but rather actively involved in all aspects of management, research and monitoring. The goal is to conserve the forest while

Source 14.6.2 The Calakmul Biosphere Reserve is located on the southern Yucatán Peninsula, Mexico.

improving the income from forest activities. Tourism-based livelihoods, such as guided tours to the Mayan ruins or bird-watching hotspots, are being encouraged.

Workshops have also been held to bring together several communities in the CBR to share their experiences of practices that lift production levels without damaging the rainforest. Those involved



Source 14.6.3 Biosphere reserves have a research-intensive core area or core areas at their heart, surrounded by a buffer zone, where sustainable development is fostered, before gradually transitioning into the surrounding region.

in tapping resin from the chico zapote tree have managed to improve their productivity so that now fewer trees are tapped than in the past. Farmers have also been given funding to assist them to become self-sufficient by using their land more intensively, rather than clearing additional forest.

El Mundo Maya

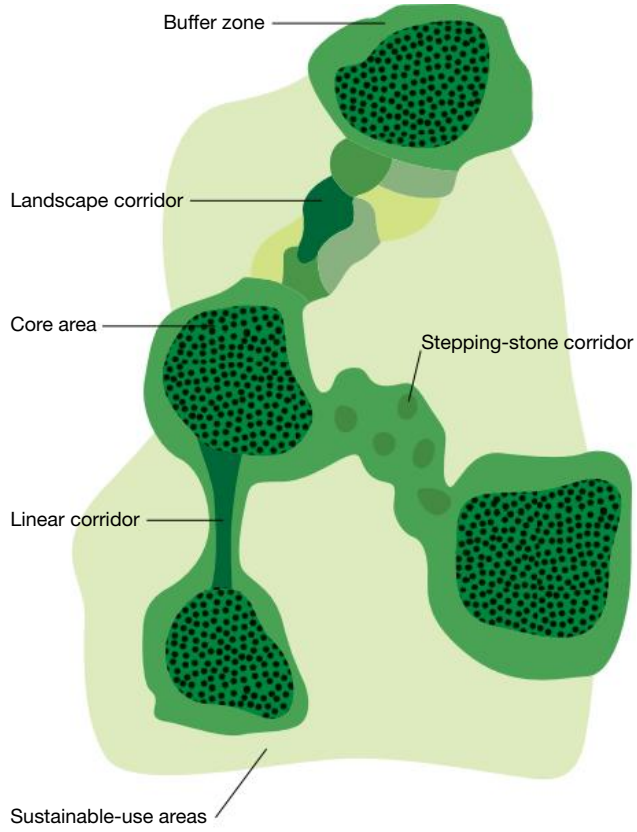
The Yucatán Peninsula is known for the Mayan ruins found in the heart of the forest. Mexico joined with Belize, Honduras, Guatemala and El Salvador in a regional plan to develop eco-archaeo-tourism throughout the Maya lowlands. The organisation El Mundo Maya now develops and promotes environmentally sensitive tours of ruins, historical sites and rural areas within all five countries.

Mesoamerican Biological Corridor

Mexico is one of seven countries that have agreed to coordinate their efforts to stem the loss of biodiversity in one of the world's biologically richest regions. The Mesoamerican hotspot holds a disproportionately high percentage of the earth's biota: more than 7 per cent of global species are found here, in less than 0.5 per cent of global land area. The species diversity in the rainforests is threatened by poverty and population pressure.

The Mesoamerican Biological Corridor (MBC) is an ambitious effort to connect large existing parks and reserves with new protected areas using a network of habitat corridors. Five such corridors are located within south-east Mexico to enable the sustained movement, migration and dispersal of species over long distances. The MBC links North America to South America. It was initiated in 1997 to keep 106 critically endangered species from becoming extinct and follows an earlier proposal called Paseo Pantera (the Panther's Path).

The MBC also addresses the needs of the local people living within the region. It includes multiple-use areas where low-impact human activities such as agriculture, fisheries and agroforestry are permitted. The MBC represents a holistic approach involving human environment systems. It seeks to address the relationship between human-impacted land and the expanses of mature rainforest in the region.



Source 14.6.4 An ecological network

Exploring solutions

There are a number of management options for addressing the challenges of environmental change in forest landscapes.

Ecological networks

Ecological networks consist of core areas, corridors and buffer zones (see Source 14.6.4). Corridors create a permanent connection between core areas. The core areas and connecting corridors are surrounded by buffer zones, which serve as a protection from possible disruptive external influences. Beyond the core areas and connecting corridors lies another area with land selected for sustainable use with preservation of several ecosystem functions.

Management strategies

Since the 1980s, the Mexican Government has made a determined effort to develop the southern Yucatán Peninsula by increasing food production and incomes while maintaining a mature forest cover. The Calakmul Biosphere Reserve, shown in Source 14.6.5, and El Mundo Maya were established to facilitate this.

The success of these efforts can be judged by considering the criteria used for evaluation.

Source 14.6.5 Mayan ruins in the Calakmul Biosphere Reserve

Environmental

The increasing number of landless peasants within the region has placed added pressure on the land, fragmenting and opening the forest landscape. Large-scale burning and the invasion of bracken fern, particularly along the edge of the CBR are hazards. After a forest has been cut for cultivation, if it is able to regenerate naturally, it takes 25 years for the species abundance to return, but more than a century for the forest biomass to build up. With population pressure in the region, such regeneration does not occur; rather, further clearing occurs, with dire environmental consequences.

Economic

The implementation of El Mundo Maya has brought revenue from tourism, although most poor migrants who have moved into the region rely on agriculture for a livelihood. They have been supported by the government-led development of *ejidos* and non-government initiatives promoting agroforestry.

Many of the rules and programs that were designed to make agriculture compatible with protecting the forest cover in reality run counter to it. The Mexican Government's efforts to transform the region into a green economy have faltered. In an attempt to curb deforestation, the government provided households with payments to intensify their landuse. However, as the farmers encountered economic difficulties, they used the payments to clear additional forest for grazing, which was an unforeseen outcome of the program.

Social

Involving the local communities in managing, researching and monitoring the CBR has been a successful, socially inclusive, management response. As the people have not been displaced, and have been able to supplement their income by supporting tourism in the CBR, they recognise the importance of protecting its natural values. There is some resentment that the tourists' needs are prioritised above their own when it comes to allocating water.

The pressures on the southern Yucatán Peninsula are magnified by poverty. Desperate people feel they have no choice but to proceed with land uses that may damage forests. What is evident is the need to address such poverty and reconcile the very different objectives of the various stakeholders.

ACTIVITIES

Remembering and understanding

1 Outline the pressures on the tropical rainforests of the southern Yucatán Peninsula of Mexico.
2 Describe how these forests in Mexico are being managed.
3 Explain why such a lengthy wildlife corridor was considered necessary to protect biodiversity in Central America.

Applying and analysing

4 Write a report evaluating the effectiveness of the management of the southern Yucatán Peninsula, using environmental, economic and social criteria.
5 Draw a Venn diagram to compare the effectiveness of management responses in the Great Eastern Ranges Conservation Corridor (see unit 2.6) and the southern Yucatán Peninsula.
6 Study the photograph of the *ejidos* in Source 14.6.1. Draw a photo sketch, labelling important features of both the biophysical and constructed environments.

Evaluating and creating

7 Investigate the countries that are part of the Mesoamerican Biological Corridor. Prepare a brochure to appeal to ecotourists that highlights the biodiversity found within the rainforests of this corridor.

UNIT 14.7

Inquiry tasks

Karri forests

Research the karri forest regions. Write an illustrated article for a geographic magazine highlighting the importance of these forests and explaining any threats to them. Your article should include the following:

- a map showing the location of karri forests
- an outline of the environmental, economic and social importance of these forests
- a description of the threats facing the forests and how these impact upon people and animals
- solutions being implemented to minimise these threats.

Source 14.7.1 The height of the enormous karri trees is clear in comparison with the girl walking through this karri forest in Pemberton, Western Australia.

What is eating the forests?

Massive areas of forest on the continent of North America have suffered forest die-off as a result of outbreaks of tree-killing insects. Other forests throughout the world have also experienced forest die-off, such as Russia and Australia.

Research information on one of the species listed in the table below, and create a poster, brief slideshow or other negotiated format to present your findings to the class.

Common name	Scientific name
Siberian moth	*Deondrolimus superans*
Mountain pine beetle	*Deondroctonus ponderosae*
American elm bark beetle	*Hylurgopinus rufipes*
Ips beetle or engraver beetle	*Ips species*
Spruce beetle	*Dendroctonus rufipennis*
Douglas-fir beetle	*Dendroctomus pseudotsugae*
Christmas beetle	*Anoplognathus species*
Redgum lerd psyllid	*Glycaspis brimblecombei*

The presentation should include information about:

- the insect species (common names and scientific name) and its life cycle
- tree species affected by the insect
- the impact of the insect on forests (for example, the area of forest loss, regions affected)—a satellite image or map would be useful
- factors contributing to the increased levels of die-off
- management strategies in place to control the rate of tree or forest loss.

Weeds of National Significance

Australian governments have identified a number of Weeds of National Significance (WoNS). Weeds are included on the list according to their growth habits (invasiveness, and potential for further spread), and their potential impacts (economic, social and environmental).

Produce a brochure outlining the threats to the biodiversity of the GER corridor by one of the following WoNS:

- apple (*Annona glabra*)
- madeira vine (*Anredera cordifolia*)
- asparagus fern (*Asparagus aethiopicus*)
- bitou bush (*Chrysanthemoides monilifera* subsp. *rotundata*)
- rubber vine (*Cryptostegia grandiflora*)
- lantana (*Lantana camara*)
- blackberry (*Rubus fruticosus aggregate*)
- willows (selected *Salix* species)
- bellyache bush (*Jatropha gossypifolia*).

Ecotourism

South-eastern Mexico has significant areas of tropical rainforests that have come under threat as agriculture and eco-archaeo-tourism have expanded. The southern Yucatán Peninsula illustrates how these drivers of environmental change are reshaping the forest ecosystems. It also illustrates how vulnerable the remaining tropical rainforests are to such change.

Your task is to develop an ecotourism holiday plan for Mexico's Yucatán Peninsula.

The plan needs to include an itinerary: places people will visit and what they will do. The plan must include how the trip is sustainable—environmentally, economically and socially.

GLOSSARY

adaptive management mechanisms a process of continually improving management policies and practices by learning from the outcomes of those previously employed

biodiversity (connectivity) corridor a plant corridor that connects healthy ecosystems as a way of maintaining biodiversity

biomass plant material derived from living, or recently living organisms

biosphere reserve an area of land following a zone-based approach to conservation whereby the inner core of high ecological value is protected

carbon sink a forest, ocean or other natural environment viewed in terms of its ability to absorb carbon dioxide from the atmosphere

clear-cutting the process by which all trees in a forest area are cut down

conservation reserve an area of land set aside to maintain biodiversity and/or natural or cultural heritage values

deforestation the removal of large expanses of trees to make way for other land uses

emergent trees trees that tower above the forest canopy

endemic native to a certain place

environmental strategy a plan to accomplish a specific environmental objective

hunter-gatherers people who survived by catching game, fishing and gathering plant food

overstory the upper tree layer or canopy of a forest

population viability the ability of a population of species to persist over time and avoid extinction

shifting cultivators people who clear a small patch of forest to grow food in gardens that they then abandon when yields decline

subsistence producers farmers who grow just enough food to feed themselves and their families

transboundary pollution air and water pollution that travels from one jurisdiction to another

understory the smaller plants adapted to the shady conditions of the forest floor

CHAPTER 15

Inland water environments

Life on earth depends on the waters of inland aquatic environments. These include flowing waters such as **groundwater**, creeks, streams and rivers; and standing waters such as lakes and wetlands. These bodies of water can be permanent or ephemeral (short-lived), such as intermittently flooded wetlands.

Inland waters and wetlands not only meet the needs of humans, they also provide a habitat for a variety of plant and animal species. Some animal species, such as fish and frogs, require water throughout their life cycle. Some may use aquatic areas for a specific stage of their life cycle, for example birds and amphibians. Still others may depend on aquatic ecosystems for resources such as food, or as a corridor for movement. Under the right conditions, these environments can support large and spectacular breeding colonies.

Source 15.0.1 Dalyan Delta, near Mulga, Turkey, where silting has created a warren of reed-covered streams

UNIT 15.1

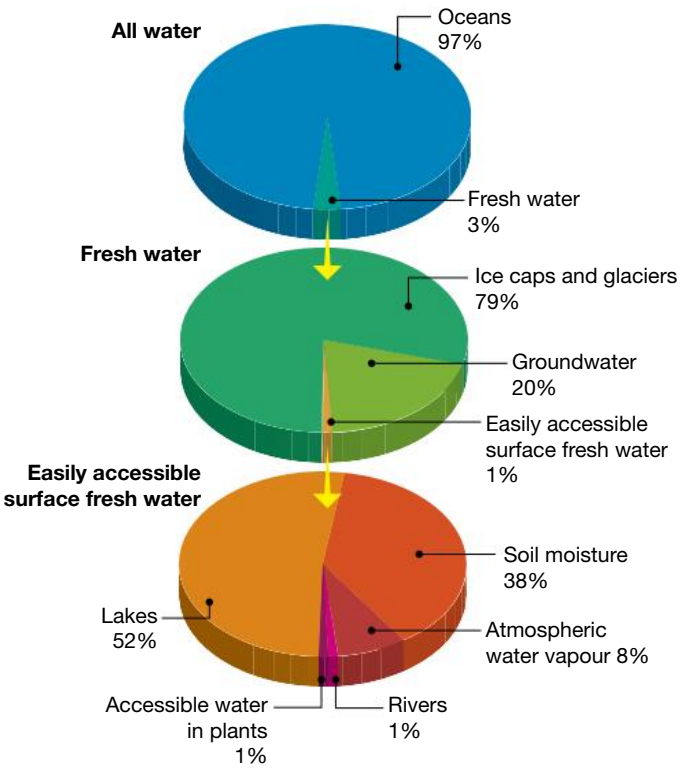
The inland water environment

Elements and processes of the biophysical environment

Inland waters are critical to life on land. They are part of wider landscapes that are rich in biodiversity and provide many services that sustain the earth's continuing productivity. Humans need water for their survival and they use it extensively, withdrawing water from surface and ground-based sources, and as a means of disposing of pollutants. A decline in the health of inland waters is evident and must be addressed.

Inland waters include springs, streams, rivers, ponds, lakes, floodplains, groundwater, cave waters and swamps and marshes. They are mostly fresh water, but in some areas are saline or a mixture of the two (brackish). All inland waters are part of the endless global circulation of water in the **hydrologic cycle**. Only 3 per cent of the world's water is found on land, and most of this is locked up in glaciers and ice caps, so the availability of fresh water is limited, as shown in Source 15.1.1.

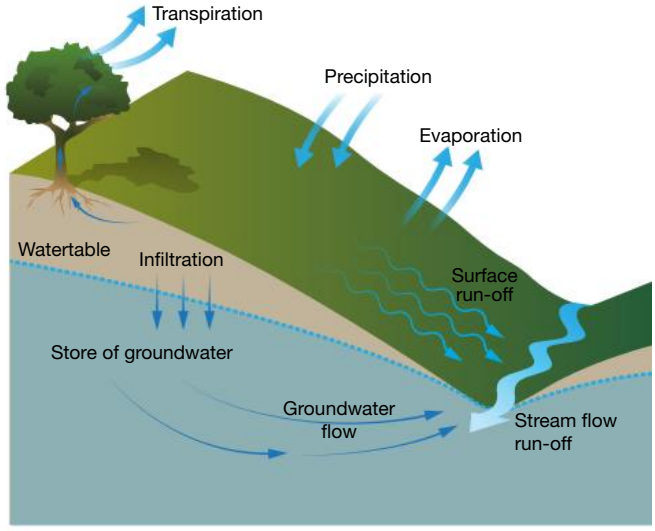
Source 15.1.1 Global water distribution



Types of inland waters

Inland waters are quite distinctive, especially in terms of where they are found in the landscape, and the manner and speed with which the water moves. Inland waters accumulate, either permanently or seasonally, in water storages above and below the land surface. Flowing water and still water are very different, as is the water that trickles through underground.

The water that falls as precipitation returns quickly to the atmosphere through evaporation, or is transpired by plants. Some disappears under the land to become groundwater, while the remainder flows or accumulates as surface water, as shown in Source 15.1.2. Both groundwater and surface water are closely interrelated. Water that runs across the land surface or collects upon it is the most visible and the most accessible to humans, and is considered the most important as a resource.



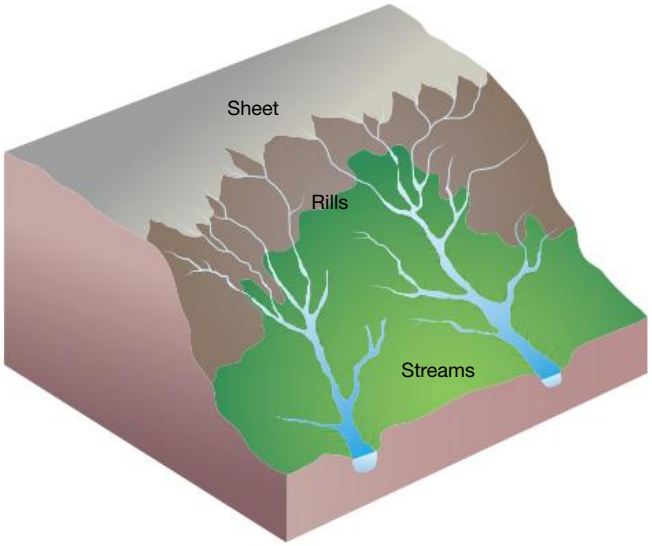
Source 15.1.2 Portion of the global water cycle showing water involved in the circulation over land areas

Surface water

RUNNING WATER

Surface water flow is called run-off. It may take one of two paths downslope—**overland flow** or **stream flow**. On a fairly smooth surface, overland flow can be seen as a sheet of water, but on steeper and rougher slopes the flow can be interrupted or broken, with the water concentrating in rills or rivulets, as shown in Source 15.1.3.

Further downslope, the water concentrates in long, narrow channels or streams. The channel is the easiest



Source 15.1.3 Movement of running water down a slope

path for the rapid flow of water and the load of sediment it carries. These channels or streams, which usually begin high up in hills or mountains, form the tributaries of rivers. Streams can vary enormously in width and length.

STANDING WATER

When surface water flows into natural dips on the land surface it can collect as still water in small shallow ponds or large bodies of deeper water known as lakes. Some lakes are the sources of rivers and other rivers end in lakes. Australia is a continent with a sunken centre, and inland rivers such as the Barcoo and Diamantina drain towards Lake Eyre, which is 15 metres below sea level. When rivers break their banks during a flood and spill out onto their adjacent flood plain, water can fill any depressions and sit there until it evaporates.

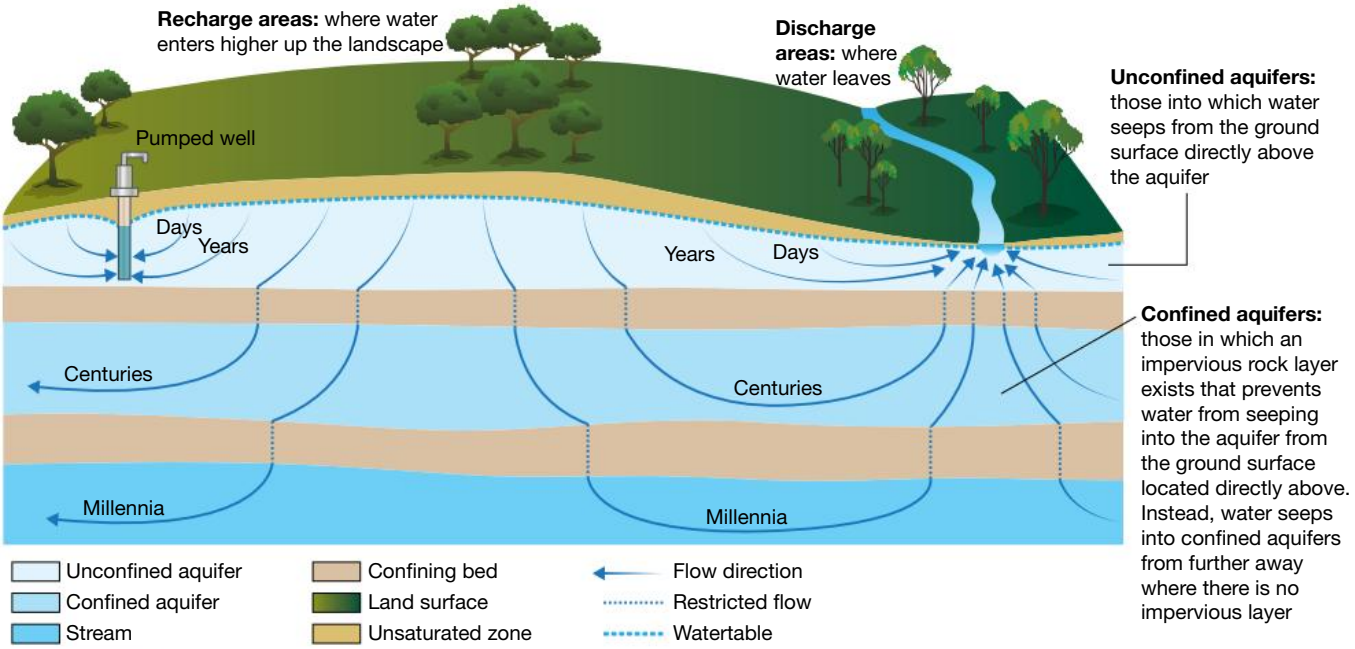
WETLANDS

When shallow water permanently or temporarily covers any area of flat land, wetlands are created. The water in a wetland may be still or flowing, and fresh, saline or brackish. Wetlands such as swamps and marshes are found adjacent to rivers and lakes, and are characterised by water-saturated soils and aquatic plants.

Groundwater

When precipitation falls, it seeps into, or infiltrates, the soil and disappears below the ground. As gravity continues to pull the water downwards, it percolates or moves through the cracks and holes in porous rocks until it reaches impervious rock that stops any further downward percolation. Groundwater builds up in porous water-bearing rocks, forming an **aquifer**. Typically, water sits in tiny pores or spaces between the smallest rock particles in the aquifer. Its upper surface is called the **watertable**.

Groundwater is recharged or replenished slowly when infiltrating rainfall or floodwaters seep down into the aquifers, in time scales ranging from years to millennia. Source 15.1.4 illustrates groundwater flows. Eventually, all groundwater discharges back to the surface or the ocean.



Source 15.1.4 Cross-section of two types of aquifers. An unconfined aquifer below the watertable flows into a stream and is also drawn down in a well. Below that, two confined aquifers are renewed over much longer time scales.

Interactions and natural balances

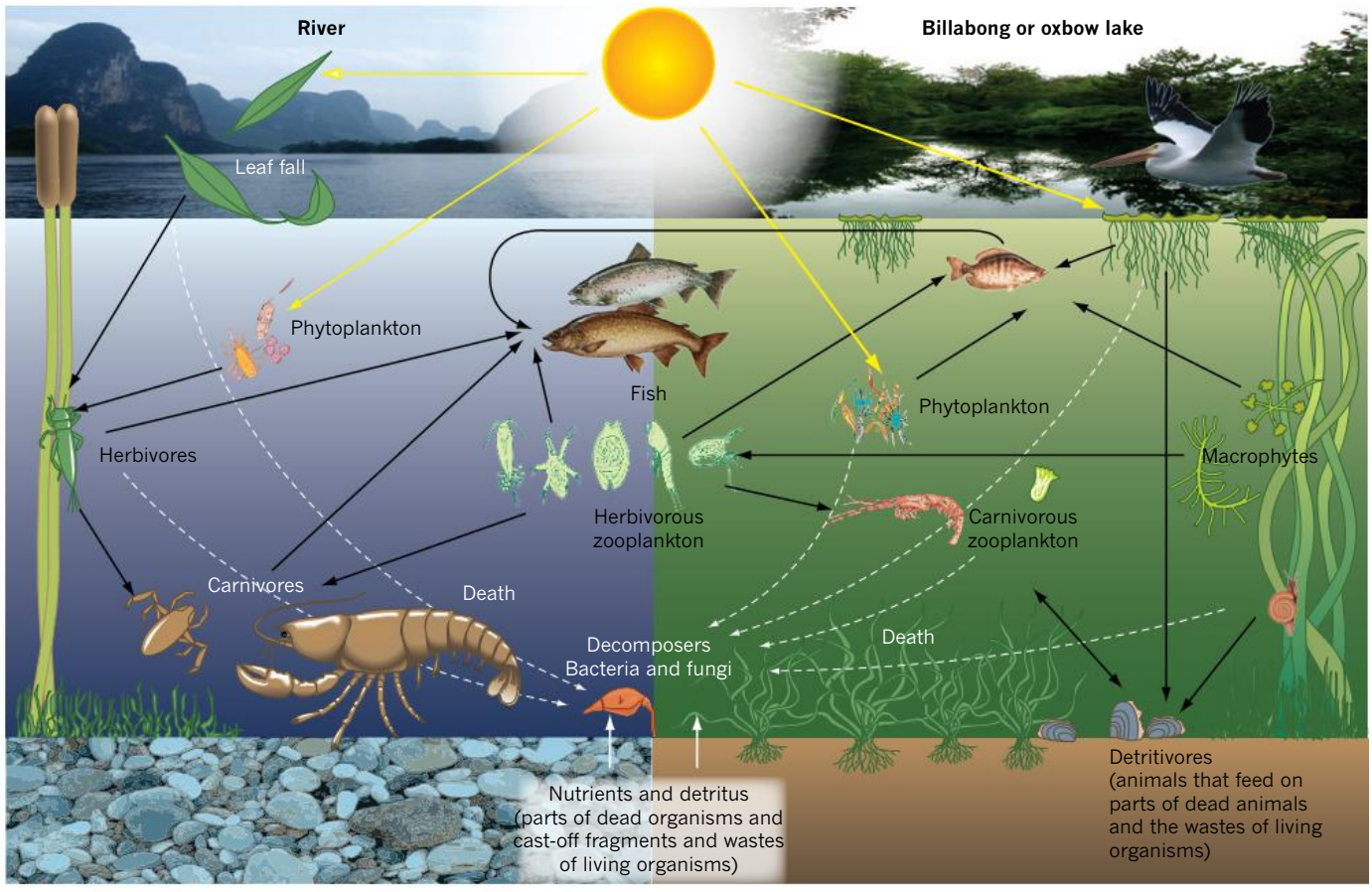
Most of the water flowing down rivers comes from groundwater seeping into riverbeds. This is most visible in small streams higher up in the hills that are 'spring fed' as the watertable reaches the surface. The most compelling evidence of this is that permanent rivers flow all the time, when months have gone by without a drop of rain or any overland flow into them. It is the constant, slow discharge of groundwater that sustains constant river flow. In many places where groundwater discharges naturally to the surface, bubbling into natural springs, it not only sustains these streams and rivers, but also supports many other ecosystems, such as wetlands.

Rivers, lakes and wetlands are rich and diverse habitats. Even big rivers have quiet pools within them, and seemingly calm lakes have turbulent currents under the surface. Flowing water feeds into and moves out of bodies of still water. Inland waters are directly nourished from the land. As they move over the land, they collect nutrients from fertile soil, as well as any leaf fall or organic debris that settles on the water surface. The nutrients are used by aquatic plants and continue to be recycled within the ecosystem. The shallow waters of wetlands are very conducive to life and are especially rich in biodiversity. They have complex, interrelated food webs, as can be seen in Source 15.1.5.

Distribution and extent of inland waters

The planet's fresh water supply is virtually limitless in the sense that it is continuously recycled by the hydrologic cycle. However, it is unevenly distributed, with some regions being well watered and others having very little water. Australia is described as a continent with a wet rim and a dry interior.

Precipitation and run-off levels influence the distribution of river networks. Australasia only contributes 2 per cent of the world's fresh water discharged into the ocean, whereas over 30 per cent pours in from each of Asia and Latin America. There are estimated to be 5 to 15 million lakes across the world, over 10 000 of them larger than a square kilometre. A disproportionate share of the larger lakes is found in North America, especially Canada, where glacial scouring created many depressions that have subsequently filled with water.



Source 15.1.5 A billabong food web

Inland water biodiversity

Water and biodiversity are interdependent. A disruption in either means a disruption to both. This is because all life depends on water. The hydrologic cycle not only drives the functioning of the biophysical environment, it also sustains life. Quite apart from the various processes of the cycle itself (such as precipitation, infiltration, surface run-off), water is fundamental to the physical and chemical processes upon which life depends. In turn, the storage, movement and transfer of the water are driven by physical attributes of the environment, which is a product of biodiversity.

Such interdependence can be seen in the following examples:

- Vegetation cover directly affects the rates of transpiration, evaporation, infiltration and run-off in a drainage basin. Slopes covered by forests readily absorb and capture water and maintain water quality by protecting soils from erosion.
- The flora, fauna and microorganisms in inland waters play a significant role in purifying the water itself, by removing high levels of nutrients and contaminants.

Importance of inland waters

The major concentrations of the world's population demonstrate the importance of inland waters to humans. Fresh water is used in households, agriculture and industry. It is essential to our way of life and our economy. Water resources are an input in the production of almost all goods. Inland waters also support fisheries and tourism. Australia exports most of its agricultural produce and effectively supports a population of 67 million people globally.

Water environments have long held a deep spiritual value for Indigenous Australians. In a continent as dry as Australia, rivers, lakes and estuaries are also valued for their recreation opportunities and have become part of the national identity. Some people have a strong sense of place and quite an emotional attachment to iconic water environments, such as the Murray River.

Globally, inland waters are critically important for poverty reduction and the achievement of human development targets. Inland water biodiversity, especially inland fisheries, provides food security for millions of the world's poor. It is estimated that groundwater supplies drinking water for an estimated 1.5 to 3 billion people and, in most areas, groundwater is recharged through functioning wetlands. The rest of the world's population relies on the surface water provided by functioning freshwater ecosystems.

Ecological services

There are many important benefits derived from the ecological services provided by inland waters. These include:

- habitats for terrestrial and aquatic species
- an extraordinarily high level of biodiversity, which includes not only life within the waters, but life that depends on inland water habitats.
- processing waste and absorbing nutrients, which keeps water clean
- flood management, as wetlands in particular absorb enormous amounts of water after extreme rain events
- climate regulation and carbon sinks.

ACTIVITIES

Remembering and understanding

1 Describe inland waters.
2 Identify the paths that water may take after it falls on land as precipitation.
3 Describe a wetland.
4 Explain why rivers continue to flow long after rain has fallen.

Applying and analysing

5 Study Source 15.1.3 and describe how water flows down a slope to a river in a drainage basin.
6 Study Source 15.1.4 then answer the following questions.
   a Which type of aquifer is in more danger of contamination? Give reasons for your answer.
   b Which aquifer is safer to drill into for a drinking water well?

Evaluating and creating

7 Research carbon sequestrations in peatlands to determine why peatlands are so effective in storing carbon. Prepare a poster promoting the protection of peatlands.

UNIT 15.2

Causes of environmental change

The condition of inland waters

Humans change almost all aspects of inland waters and the landscape they are part of—shifting water around for different uses, overusing and polluting it, and degrading the environment that supplies it. Globally, inland waters are being modified by human activities and they are in serious decline due largely to the pressures placed on them by their various users.

Over half the world's largest river systems have been moderately or extensively modified by dam construction, flow regulation and water extraction. Over half the world's wetlands have been lost. Freshwater populations of vertebrate species were reduced by 50 per cent between 1970 and 2005. This is a sharper decline than has been observed in marine or terrestrial ecosystems.

Australia does not have a comprehensive account of the distribution or condition of its freshwater ecosystems. Major loss of habitat has been observed, but the exact loss of ecosystem values and species cannot be accurately reported. We do know that in the 40 per cent of the continent that has been most intensively used, over 85 per cent of the rivers have been degraded by human activity.

In the Murray–Darling Basin, 20 of the 23 rivers have been rated as being in poor or very poor ecological condition (see Source 15.2.1). Populations of native fish have declined significantly over the past five decades, with fish communities currently reduced to about 10 per cent of their pre-European levels. More than half of the 35 native fish species in the basin are considered threatened or rare. Exotic (introduced) species make up 56 per cent of the total fish biomass in the lower catchment.

According to the Commonwealth Scientific and Industrial Research Organisation (CSIRO), approximately 50 per cent of Australia's wetlands have been lost to other uses, including 90 per cent of the flood-plain wetlands of the Murray–Darling Basin, 50 per cent of coastal wetlands in New South Wales and 75 per cent of wetlands on the Swan Coastal Plain in the south-west of Western Australia.

Humans and inland waters

Disturbance and regulation of water flows

The demand for water has exploded over the last century, and the extraction, storage and diversion of water have significantly changed the distribution and movement of

Source 15.2.1 Monoman Creek, Chowilla flood plain, South Australia, during the millennium drought (circa 2000), with dying red gums and a blue green algae bloom

Source 15.2.2 Woronora Dam, Sydney. The concrete barrier of the dam has been built across the river to impound its water.

Did you know?

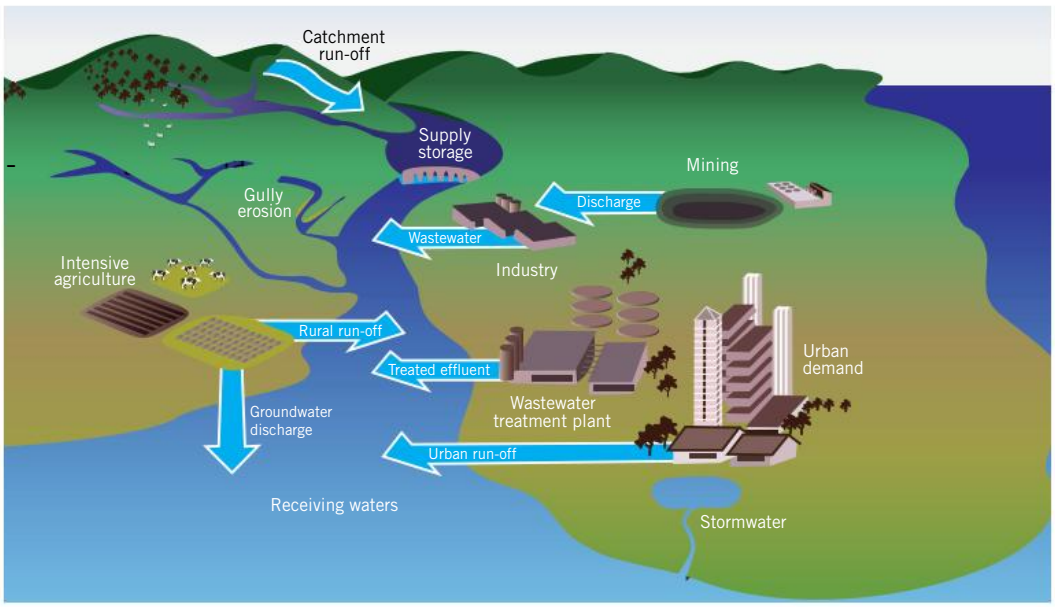
A drop of oil can make 25 litres of water unfit for drinking.

both surface and groundwater. Rivers have been altered for thousands of years, but the scale of modifications has escalated. Most of the world's major river systems have been regulated; that is, they now have dams, weirs, inter-basin diversions, canals and irrigation channels.

Dams are the most significant form of river regulation. They capture and store river water and hold it until it is released to downstream users, giving water security to those in urban centres (drinking water and industry) and on the land (irrigation and stock water—see Source 15.2.2). Dams safeguard against extremes of both drought and flood in regions susceptible to unreliable rainfall. Dams also have the capacity to catch and hold back excessive run-off that would otherwise cause severe flooding problems downstream. Levees are constructed along the banks of rivers to contain floodwaters within river channels so they do not inundate flood plains. Embankments have also been built along rivers to improve navigation, as rivers are a major means of transportation.

Deterioration of water quality

Over the past four decades, the contamination of water by toxic chemicals and the excessive loading of nutrients have contributed to the degradation of inland waters, as shown in Source 15.2.3.



Source 15.2.3 There are many potential sources and pathways of pollutants in water bodies. *Water: Science and Solutions for Australia*, CSIRO, 2011

Source 15.2.4 Aerial spraying in Virginia, South Australia. Fertilisers and agrochemicals applied in this manner can end up in both surface water and groundwater.

TOXIC CHEMICALS

Over 200 000 human-made industrial and household chemicals are commonly used in Australia. They can enter waterways in run-off from cities and agricultural areas, wastewater discharge from industry and sewage works, and even settle on the water surface from the air above (see Source 15.2.4). Pesticides, herbicides, insecticides, polychlorinated biphenyls and petroleum hydrocarbons are all found in waterways. At worst, industrial accidents such as major chemical spills can have devastating consequences.

Another concern is the seepage of chemicals into aquifers. Contaminated rivers may be flushed clean after a big rain event, but aquifers are not, because groundwater movement is so slow and there is no dilution of the contaminants.

NUTRIENT LOADING

Sewage is the largest and most common cause of poor water quality in inland waters. Up to 90 per cent of sewage in the urban areas of poor developing countries flows untreated into waterways. Not only does sewage add excess nutrients to waterways, but it may also carry dangerous pathogens or disease-causing organisms such as bacteria and viruses. The rivers downstream of the largest cites are often little cleaner that an open sewer.

The excess application of fertilisers can load run-off with concentrations of phosphorus and nitrogen. Nutrient loading is projected to become an increasingly severe problem for inland waters.

SEDIMENT

Deforestation, overgrazing and ploughing have caused a massive acceleration of erosion in many catchments. Overland flow has carried the sediment into waterways. Nutrients are attached to the soil particles, compounding the problem of nutrient loading.

Pests and invasive species

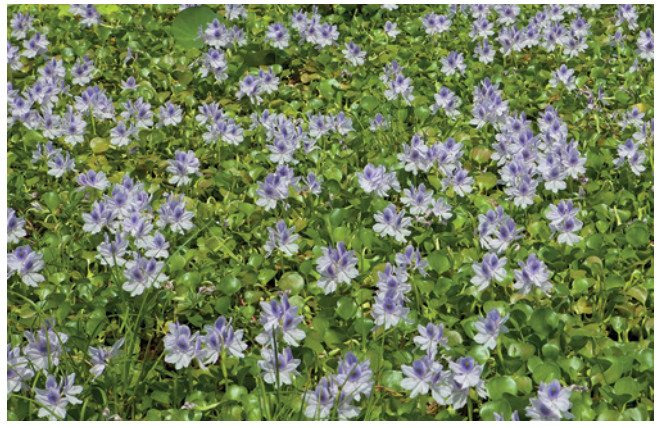
The introduction of exotic species is rated second only to habitat degradation in causing freshwater species extinction, as the invasive species can become the dominant life form in an inland water environment. The water hyacinth was found in the upper reaches of the Amazon in the mid-19th century and taken all over the world as an ornamental plant. It is now considered one of the worst aquatic weeds on the planet, infesting rivers, lakes, dams and channels on all continents apart from Antarctica. It quickly extends its range, choking waterways and reducing the availability of light and oxygen to other organisms (see Source 15.2.5).

The global spread of exotic species has increased with the expansion of global commerce, shipping and aquaculture. Exotic fish introductions have eliminated or reduced the populations of native fish. Carp is a large freshwater fish native to central Asia. Introductions in many countries have helped to make carp the most widely distributed freshwater fish in the world. It is extensively farmed in Europe, Asia and the Middle East, and is a popular angling fish in Europe. However, in North America, Canada and Australia, carp is considered a significant pest.

Climate change

Climate change and, in particular, reduced rainfall, increased drought, more intense rainfall events, sea-level rise and warming of the water column will have an impact on inland waterways and wetlands in many ways. They will cause:

- reduced river flows and changes in seasonality of flows
- changes in species composition and community structure (such as loss of cool-adapted aquatic species)



Source 15.2.5 Water hyacinth is a weed that floats in a mass, covering waterways and causing the water underneath to putrify.

- reduced availability of areas for waterbird breeding
- saltwater intrusion into freshwater bodies (through sea-level rise)
- changes in water quality, **eutrophication** levels and the incidence of blue-green algae outbreaks.

Changing inland water environments

Inland water environments have been sustained by the cycling of water in the hydrologic cycle. Altering the flow regimes of both surface and groundwater, as well as changing the physical and chemical properties of the water, have affected the biophysical processes that sustain these environments.

Altered flow regimes in rivers

If the functions of inland water ecosystems rely on the availability of water, then moving water away from them will affect their biophysical processes. The construction of dams and weirs to control river flow interrupts the downstream movement of water and sediment.

- Dams change the pattern of the flow of a river, both lowering its overall volume and altering its seasonal variations in flow. This can cause the ecological web in a river system to unravel, as species cannot adapt.
- All parts of inland water landscapes can be affected by changes to flow regimes. Flood-plain ecosystems such as wetlands are closely tied to a river's flooding cycle, because the river replenishes them with water and nutrients. Many aquatic species depend on the variations in flow for reproduction, hatching, migration and other important lifecycle stages.
- Above the dam wall, the free-flowing river ecosystem is transformed into an artificial slack-water reservoir habitat. This alters many of the physical and chemical properties of the water held there, such as temperature and dissolved oxygen levels. These new conditions may not suit the native species that evolved in the river.
- The dam wall itself blocks fish migrations, so fish can no longer reach their spawning areas.
- The dam wall holds back sediments that would naturally replenish ecosystems downstream.

Excessive extraction of groundwater

Some aquifers are replenished after rain when water seeps through soils or leaks out of gravelly riverbeds. However, most of the largest groundwater storages hold ancient water from wetter times, millions of years ago. They are hidden deep below the ground and have complex geological patterns that are not well understood. It is especially difficult to measure or even estimate the amount of recharge and yet knowledge of this is what should guide extraction rates.

Aquifers are being depleted, resulting in falling watertables and lower aquifer pressures. The problem is that there can be considerable time lags, sometimes decades long, before the consequences of over-pumping water are realised. Given that many inland water environments depend on groundwater, their needs play a key part in determining sustainable groundwater extraction rates.

Irrigated agriculture is now the largest consumer of groundwater, with 40 per cent of all cultivated land dependent on wells and bores. The countries with the biggest groundwater use are India (39 million hectares) and China (19 million hectares). Where aquifers lie under deserts, the groundwater has often been pumped to the surface and transformed the landscape, as in the case of Israel and California.

Do all rivers reach the sea now?

Some of the world's greatest rivers no longer reach the sea for much of the year. The Nile flows out of the Mountains of the Moon in East Africa, recharges in Lake Victoria, and crosses the Sahara through Sudan and Egypt via the High Aswan Dam before giving up the last of its water just short of the Mediterranean Sea. Even in the monsoon season, every last drop of water is usually extracted before the Nile has the opportunity to pass through its delta.

ACTIVITIES

Remembering and understanding

1 Assess the condition of Australia's inland waters.
2 Describe how surface water flows are disturbed and regulated.
3 Identify the sources of pollution in inland waters.
4 Explain how exotic species change aquatic ecosystems.
5 Describe the impact of dams on rivers.

Applying and analysing

6 Complete the following task: 'I used to think that there would always be plenty of fresh water available. Now I think ...'

Evaluating and creating

7 Conduct a class debate on the following topic: 'Big dams are appropriate for Australia.'

UNIT 15.3

Managing inland waters

Managing inland waters

Humans must work towards a better understanding of how water can be managed, so that it will continue to meet both the needs of humans and the ecosystems on which they depend. Securing adequate fresh water has always been at the forefront of people's interactions with the environment, because without water they cannot exist.

The demands on inland waters include household drinking water and water for cooking; personal hygiene and sanitation; irrigation and other agricultural uses, such as watering stock; industrial production for such purposes as fabricating, processing, washing, diluting, cooling and being incorporated into products; fisheries and aquaculture; waste disposal, whereby waterways carry away residuals from processes of human production and consumption; and recreational uses such as swimming, boating, waterskiing and angling.

As populations and economies grow, national governments invest heavily in water infrastructure to increase the availability of water. For more than 4000 years, dams and reservoirs have been constructed across rivers to collect and store vast amounts of water and then manage releases into rivers to meet the ongoing needs of people. Many of these dams are still in operation today.

San Juan–Chama Project

The San Juan–Chama Project (Source 15.3.1) consists of a series of tunnels and diversions that take water from the drainage basin of the San Juan River—a tributary of the Colorado River in the United States—to supplement water resources in the Rio Grande watershed. The project delivers water for irrigation and municipal water supply to cities along the Rio Grande, including Albuquerque and Santa Fe. Such schemes divert vast amounts of water, taking much of the natural flow away from one basin purely to meet the demand for water of people living in another.

Where countries share river basins, **transboundary** issues of water quantity and quality may arise and conflicts can occur. Future wars could well be fought over control of this critical resource, just as they were over Gulf oil last century.

Source 15.3.1 San Juan-Chama Project, New Mexico and Colorado, the United States

Source 15.3.2 Low stone-walled fish traps once used by Aboriginal people for catching fish in the bed of the Barwon–Darling River

Indigenous Australian management

In Australia, inland waters not only provided Indigenous people with drinking water, they were also a particularly bountiful source of food, not just fish, but also the animals that were drawn to waterholes and streams to drink. Water was also taken from wells and rivers to irrigate crops.

Indigenous people developed successful systems of water management. Underlying this was the acceptance of a communal need to be at one with nature, and a recognition that water resource management was the responsibility of every person. As a consequence, they employed the principles of sustainable management, ensuring the ongoing supply and quality of water.

ABORIGINAL PEOPLE OF THE MURRAY–DARLING BASIN

The traditional owners of the lands in the Murray–Darling Basin have deep cultural, social, environmental, economic and spiritual connection to their lands and waters.

Aboriginal peoples have lived in the basin for thousands of years and there are at least 10 000 known water-related Aboriginal sites in the basin. The rivers and flood plains are of particular importance. Today, there are over 40 Aboriginal nations in the Murray–Darling Basin.

The lands of the Murray–Darling Basin provided the region's Aboriginal peoples with a diverse and abundant source of food, water and shelter (see Source 15.3.2). Shell middens of freshwater mussel shells, together with bone remnants of wallabies, yabbies, lizards, fish and birds, give us an insight into the diet of Aboriginal people.

The Aboriginal people still talk about how the waters of the basin sustain their life and identity. They view themselves as an integral part of the river system, and as a result they feel a responsibility to ensure the health of rivers.

Ramsar Convention

The Convention on Wetlands of International Importance, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. The Ramsar Convention is the only global environmental treaty that deals with a particular ecosystem. The convention uses a broad definition of wetlands, including lakes and rivers, swamps and marshes, wet grasslands and peatlands.

The convention's mission is 'the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution

Source 15.3.3 Lake Barombi Mbo, south-west Cameroon

towards achieving sustainable development throughout the world'. Lake Barombi Mbo is a small crater lake in Cameroon, Africa. It is especially important because it is an area where speciation (the process of evolutionary adaption) has been proven to take place. It is at risk from pollution, overfishing and sedimentation, and it has been nominated as a Ramsar site so that it can be protected.

Assessing the state of an environment

To manage inland waters it is important to assess the current state of the environment and how it has changed over time. In assessing the state of an environment, it is useful to use the following questions to frame the inquiry.

1 State of water
- What is the water quality? (An assessment based on the ecological quality of the water and levels of nutrients, pesticides and heavy metals)
- How much water is there? (An assessment based on data on run-off, availability, demands and any evidence of water stress)

2 Time-based trends
- Is water quality getting better or worse?
- Is the amount of water increasing or decreasing over time?

3 Is there a problem, and if there is, what is causing the problem?
- Humans and their domestic-based uses?
- Industry?
- Agricultural uses?

4 Are there policies in place to work on solutions?
- Have aims and targets been decided upon?
- Who has been employed to work on solutions?
- Has a time frame been implemented?

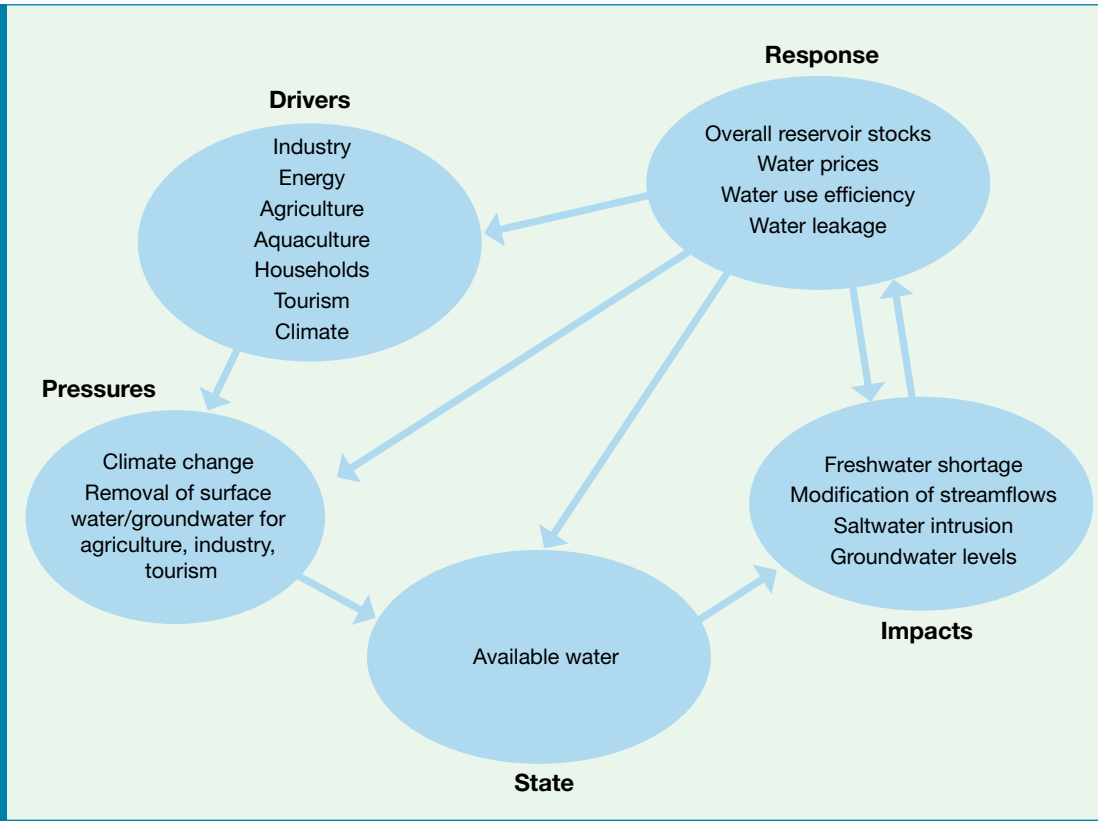
The state (type, quality and quantity) of water is determined by natural factors such as geology and climate and also by the pressures exerted by human activities. For example, geology will influence the amount of mineral material in water, while agriculture is a significant driver in terms of ecological quality, nutrient and organic pollution, hazardous substances and water quantity.

The European Environment Agency (EEA) applies human-environment systems thinking, acknowledging that humans have an impact on the biophysical environment, and applies the DPSIR framework to water issues. The analytical DPSIR framework allows a comprehensive assessment of the issues through examination of the relevant driving forces and pressures on the environment. The use of this framework to assess water quantity and quality is illustrated in Sources 15.3.4 and 15.3.5.

Source 15.3.4 A DPSIR framework for managing water quantity

Water quantity

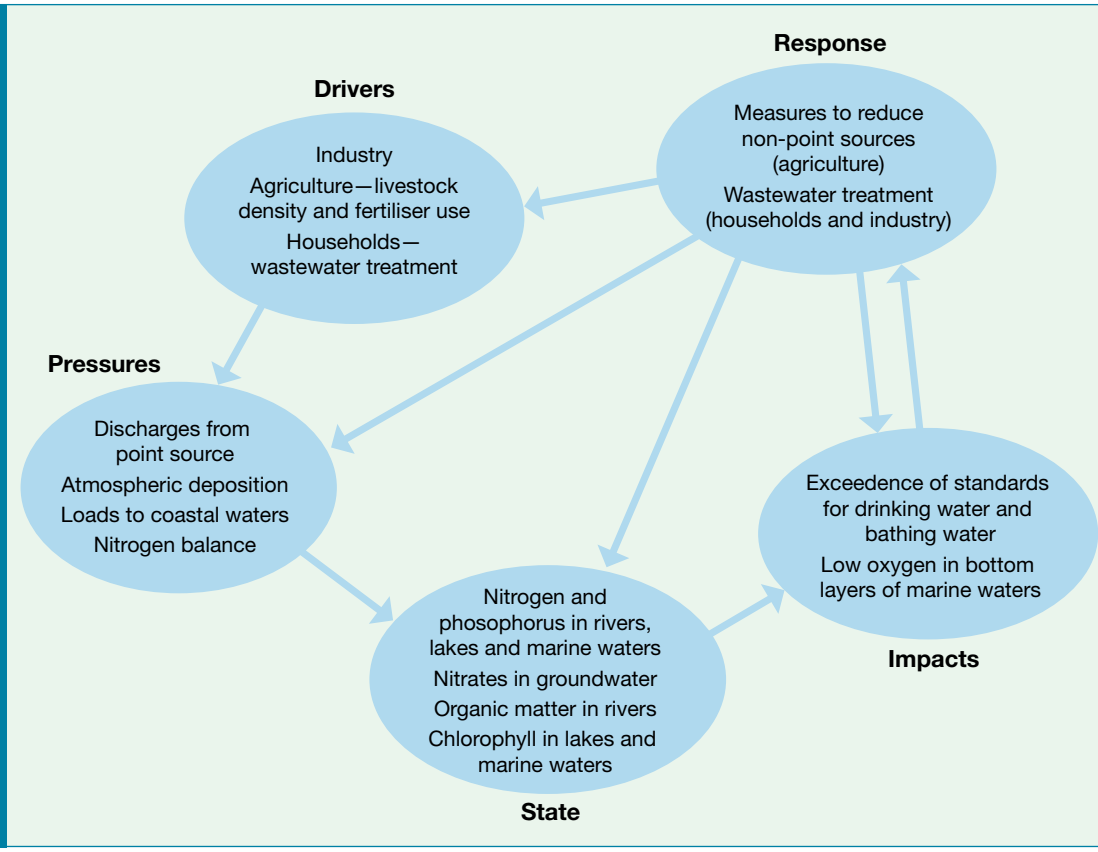
Water availability problems occur when the demand for water exceeds the amount available during a certain period. Fresh water shortages occur frequently in areas with low rainfall and high population density and in areas with intensive agricultural or industrial activity.



Source 15.3.5 A DPSIR framework for assessing water quality—organic pollution and eutrophication

Water quality—organic pollution and eutrophication

The effects on the aquatic environment of organic pollution, caused by discharges from wastewater treatment, plants, industrial effluents and agricultural run-off, include reduced river water chemical and biological quality, as well as impaired biodiversity of aquatic communities.



Management strategies

Much of the pressure on inland water environments is a legacy of the past and a human-centred worldview: the impounding of rivers, the drainage of wetlands, the clearing of native vegetation in catchments and the introduction of pests and invasive species. Given the magnitude of such changes, and the recognition that they cannot be reversed, these pressures remain. This makes the current decisions about water management even more important if inland water landscapes are to be managed more sustainably and restored.

The challenge ahead is to rehabilitate and protect inland water environments while enabling sustainable use of water resources. Humans cannot do without water, and with their increasing numbers they are going to want more of it. This comes at a time when it is clear that more water needs to be given back to the environment to restore natural balances—otherwise the quantity and quality of water in the future will be compromised, not just for humans, but for all life. The biodiversity of inland waters is the evolutionary capital for continued productivity. This is especially important given the threats associated with climate change.

Ecosystem approach

The **ecosystem approach** to inland water management integrates the management of land, water and living resources in ways that promote conservation and equitable sustainable use. The ecosystem approach calls for the focus to be on the ecosystem: its components, structure, processes and functions and all the interactions that occur among its organisms and their environment.

UN Watercourses Convention

The UN Watercourses Convention (UNWC) was established to govern the management and protection of international watercourses. It deals specifically with international water law and policy. The Convention applies to surface and underground water systems that cross international borders, and includes all major rivers, their tributaries, and connected lakes and aquifers. The UNWC takes into account and promotes the ecosystem approach in the use of such watercourses by considering transboundary environmental effects. This enables cooperation between nation states in:

- arriving at a reasonable and equitable use of shared water resources
- undertaking measures to rehabilitate and restore degraded ecosystems.

Following the ecosystem approach, the UNWC makes it clear that environmental concerns and ecosystem protection are just as much within their area of responsibility as the amount of water used. Thus, both water quantity and quality are scrutinised. A priority is also the rehabilitation and restoration of degraded inland water ecosystems.

Integrated Water Resource Management

The increasing need for a more holistic approach to environmental management has led to the development of Integrated Water Resource Management (IWRM), now considered to be the most effective means of managing inland waters. In the IWRM approach, water is viewed as less of a commodity and more of a resource that needs to be equitably shared by all users, including nature. The IWRM approach involves all stakeholders working together to identify the costs and benefits of various water uses and finding an appropriate balance between development and sustaining ecosystems.

Addressing the causes of environmental change

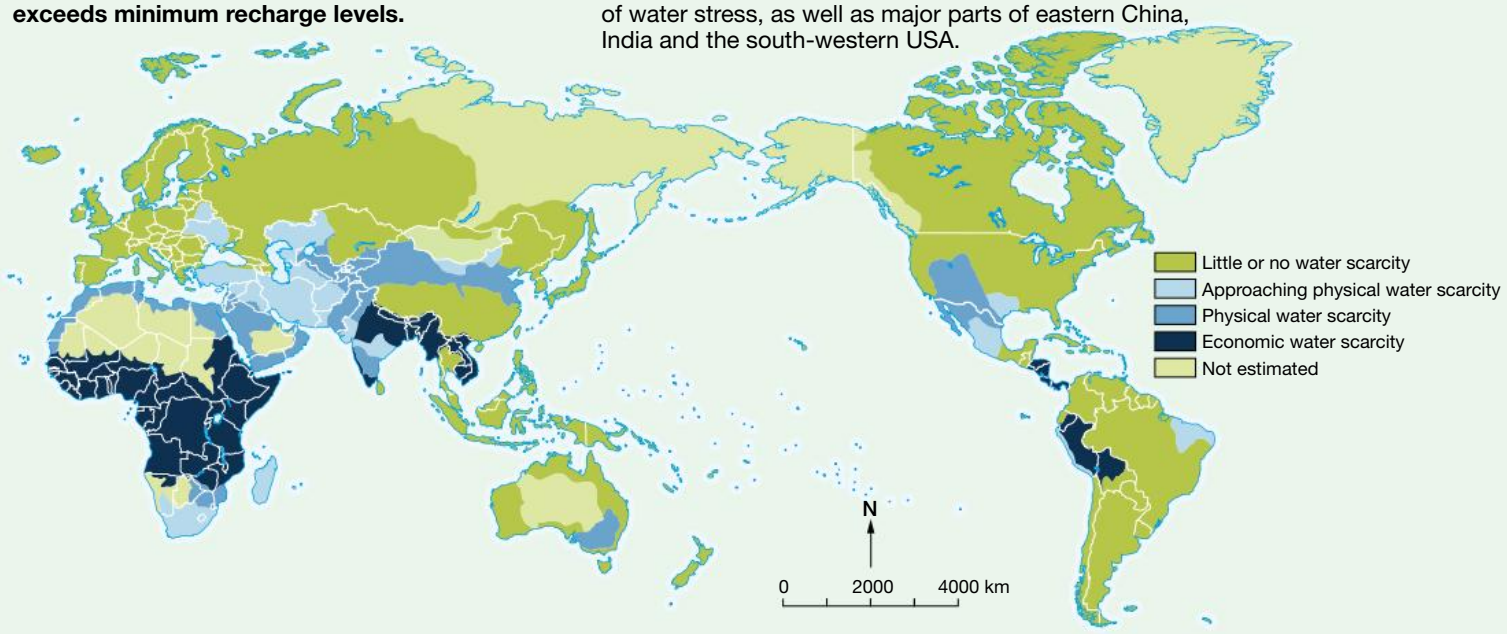
The current state of inland waters—that is, declining water quantity and quality—is a result of too much water being extracted, too many pollutants being added, and users showing little concern about inland water environments (see Source 15.3.7). In order to address the causes of environmental change, all users must be more aware and responsible in their water usage (see Source 15.3.6). People must realise that they are all downstream or across the shore from someone else.

> ***Water is unique amongst our natural resources because whilst it is renewable, it is not replaceable. We have various substitutes for energy resources and most commodities, but there is no substitute for water. Once it is gone or degraded through overuse or pollution, it cannot be substituted.***

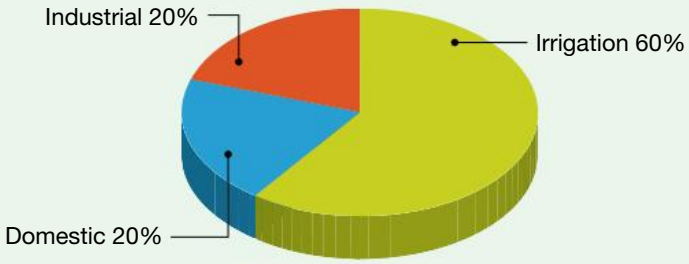
Source 15.3.6 Extract from Convention on Biological Diversity, Drinking water, Biodiversity and Development. UN Water, 2010

An estimated 1.4 billion people live in river basin areas where water use exceeds minimum recharge levels.

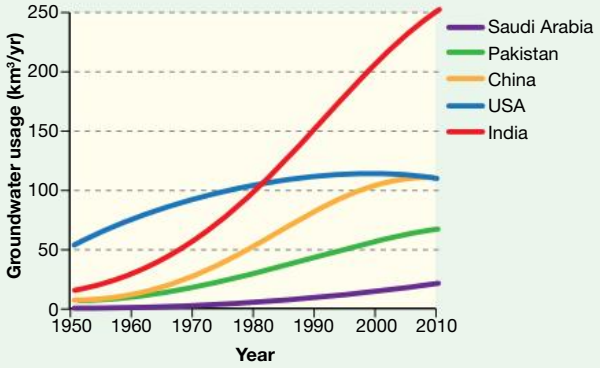
GLOBAL WATER STRESS
Middle Eastern and North African countries have high levels of water stress, as well as major parts of eastern China, India and the south-western USA.



DEMAND FOR GROUNDWATER
As of 2010, the world's aggregated groundwater abstraction is estimated at up to 1000 km^3 per year



Trends in selected countries



Source 15.3.7 All the world's inhabited continents are experiencing water stress as consumption levels rise. Comprehensive Assessment of Water Management in Agriculture, 2007; National Groundwater Association, 2013; World Water Assessment Programme, UNESCO, 2012

ACTIVITIES

Remembering and understanding

1 Describe Integrated Water Resource Management.

Applying and analysing

2 Refer to Source 15.3.7 then do the following tasks.
- **a** Identify the parts of the world that experience the greatest water stress.
- **b** Suggest reasons why water stress is an issue in these regions.
- **c** What was the approximate consumption of water by Saudi Arabia in 1990?
- **d** What was the approximate increase in consumption by the United States from 1950 to 2010?
- **e** Which country had the biggest increase in consumption from 1950 to 2010? What do you think this is a result of?

Evaluating and creating

3 As a class, apply a framework to determine the greatest challenges to management of your local, or nearest, inland water system.

UNIT 15.4

Case study: The Great Artesian Basin

A national resource

The inland water of the Great Artesian Basin (GAB) is a resource of national importance. Historically, artesian water was vital for the development of northern Australia, but viability of flows must be ensured for the future wellbeing of the region and its communities.

Australia's fabled inland sea

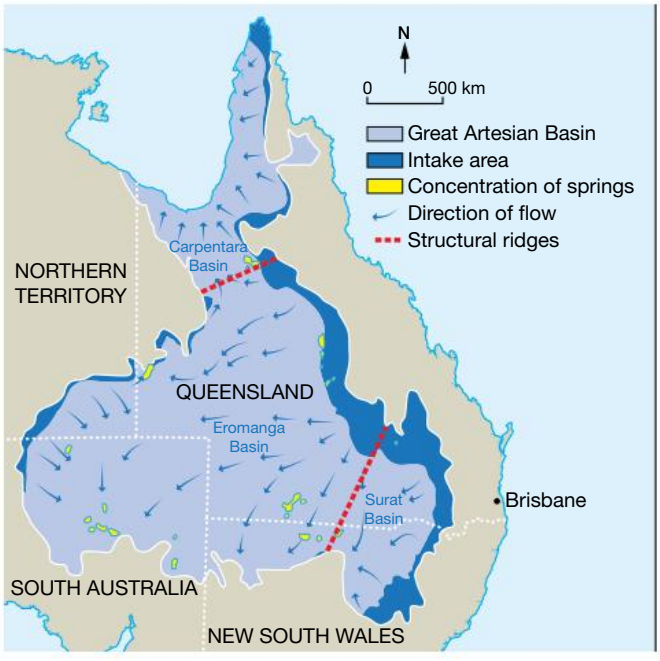
From the early 1800s, European explorers went in search of the fabled inland sea of Australia, thought to be west of the Blue Mountains. As no major rivers were seen to be entering the sea, it was believed that the rivers must flow to an inland sea. The first expedition to find the inland sea was led by John Oxley, NSW surveyor-general, in 1817. Later expeditions were undertaken by Charles Sturt in 1828, who mapped the Macquarie River and reached the Darling River. There was no inland sea to be found above ground, but underground was the Great Artesian Basin (GAB).

The GAB is Australia's largest freshwater resource. It underlies one-fifth of the continent, including parts of Queensland, New South Wales, South Australia and the Northern Territory—an area of more than 1.7 million square kilometres. The GAB is composed of many different layers of rock. Some layers, such as sandstone, are aquifers, while others are impermeable, as rocks such as mudstone and siltstone will not allow water through them. These impermeable layers are called **aquicludes**.

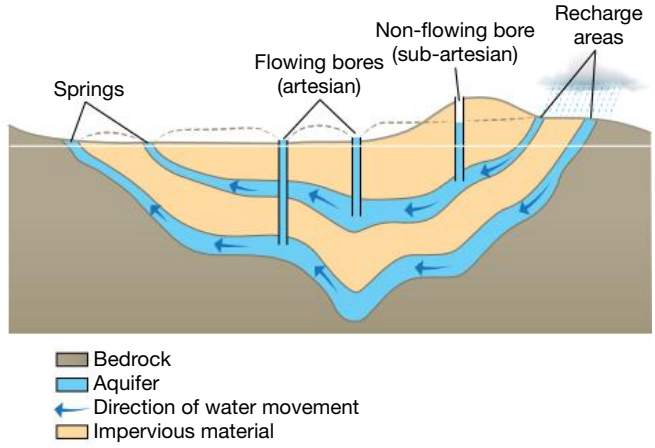
Sources 15.4.1 and 15.4.2 show that the GAB aquifers fill, or recharge, on the edges of the basin, where the sandstones are exposed. Water moves through the aquifer very slowly at a rate of only 1 to 5 metres a year. The GAB is bowl-shaped and the aquifer is sealed by aquicludes. The water at the lowest part of the basin is stored under pressure. When a bore is sunk, it rises to the surface.

Water can naturally discharge at the surface in springs where the watertable is intersected because the aquifer slopes upwards towards the surface, or where there is a fault line. There are numerous springs on the basin's fringes. As they are permanent sources of water in an otherwise dry environment, they support rare flora and **endemic** invertebrates and fish. They also support luxuriant growth of sedges, bulrushes and reeds as high as 3 metres (see Source 15.4.3). They are also referred to as 'mound springs', as they look like miniature volcanoes.

Source 15.4.1 Location of the GAB



Source 15.4.2 If the water in a bore reaches the surface unassisted, it is known as a flowing or artesian bore. If it has to be pumped up, it is called a sub-artesian bore.



Source 15.4.3 Blanche Cup mound spring in the Wabma Kardarbu Mound Springs Conservation Park, South Australia

Precious water in a parched land

The fresh water of the GAB is the only reliable source of water in many arid and semi-arid regions of Australia. It supports pastoralism, industry, mining and tourism in the region.

For tens of thousands of years, the mound springs and their pools provided Australia's Aboriginal peoples with permanent water supplies and food. Knowing where to find the springs was a matter of survival as they moved through the desert. Their use of this inland water was sustainable, as they only collected what they needed and what was naturally replenished (see Source 15.4.4).

Dean An Chee of the Southern Arrente people, Senior Ranger, Witjira National Parks and Wildlife Service South Australia:

Witjira National Park is located on the western edge of the Simpson Desert in the far north of South Australia. The responsibility to care for this country belongs to my people, the Indigenous Southern Arrente people, and the Irrwanyere Aboriginal Corporation. We have cared for this country for a long, long time.

Located in this area are many mound springs, which are central to our Tjukurpa. Tjukurpa contains our spiritual connection, our law, our culture, our heritage and the stories associated with the land.* Kwatye *is an Arrente word for water within the Great Artesian Basin. Well before my elders' time it provided more than just a source of water for Indigenous people. For it was and remains a travel path, which connects many Indigenous groups.

This water is a source of healing when we are sick, and it provides us with many spiritual and cultural interests. For it is our lifeblood, which we need to survive. It allows us to continue our ceremonies, which incorporate our rich and unique culture that is still strong today. For it is these sources of water that provide an adequate and valuable food source rich in fish and other foods for my people. As one of the traditional elders of this country, Mr Bigey Lowe, says: 'We are in the middle of* kwatye *(water), it is all around us, we have to look after this place.'

Source 15.4.4 Adapted from Dean An Chee, 'Indigenous People's connection with *Kwatye* (Water) in the Great Artesian Basin', Great Artesian Basin Coordinating Committee, 2002

When Europeans arrived and discovered these large pools of water, they set up pastoral properties. In 1878, a shallow bore was sunk near Burke, New South Wales. It produced flowing water. Within a decade, more than 500 bores had been sunk around the margins of the basin. The artesian water was held under pressure, so when it was tapped by bores most of it just flowed freely into open drains to water stock. Initially, some of the bores would shoot water 100 metres into the air and supply up to 455 megalitres in a day.

Within just a decade, there were concerns about the decline in flow from bores. Despite this, more were drilled and thousands of kilometres of open drains were dug for over a century. In that time, an amount of water equal to 100 times the volume of Sydney Harbour was extracted—and more than 90 per cent of it was wasted. It was wrongly assumed that rainwater would seep through quickly into the sandstone in the east and recharge the basin. Scientists now know it will take millions of years.

Coal seam gas

Coal seam gas (CSG) is a type of natural gas extracted from underground coal seams at depths of 300 to 1000 metres. CSG can be captured and used for generating energy, or processed into liquefied natural gas and exported. The extraction of CSG has raised many issues, including fears about damage to the aquifers and the contamination of the water.

Water must be removed from the coal seam to enable the CSG to move up to the surface. There is a fear that this will alter groundwater levels, thereby damaging the aquifer. In some coals seams, it is necessary to create fractures to provide pathways through which the gas can flow. This is done using a technique known as hydraulic fracturing, or **fracking**. This technique involves injecting a fluid made of water, sand and chemicals into the well under high pressure (see Source 15.4.5). The fluid is then pumped back to the surface, where it has to be disposed of. If gas were to escape, the chemicals could contaminate both groundwater and surface water.

Source 15.4.5 A coal seam gas well

Strategic Management Plan

The Strategic Management Plan (SMP) was launched in 2000 to provide a framework for responsible management of groundwater and related natural resources in the GAB. It guides governments, water users and other stakeholders on polices, programs and actions required to achieve optimum economic, environmental and social benefits from GAB groundwater resources. The aspirations of basin-wide management for the future are listed in Source 15.4.6.

Key elements of the vision for the state of the Great Artesian Basin in 50 years:

- ***The GAB is widely recognised and cooperatively managed as a resource of national importance.***
- ***Water managers have a sound understanding of the dynamic hydrological functioning of the GAB resource.***
- ***Recognising the benefits for all Australians, judicious management of GAB water:***
  - ***maximises productivity within limits of sustainability, based on scientific evidence***
  - ***retains options to allocate water for uses which may not yet have been conceived, for the benefit of future generations***
  - ***enhances biodiversity and cultural values associated with GAB water***
  - ***is integrated effectively with management of land and management of other water resources.***

Improvements in the state of the Great Artesian Basin from judicious management of water are evident in the following Key Outcomes (20 years):

- ***Basin pressure continues to be restored to the levels required to meet balanced biophysical, cultural and socio-economic objectives in state/territory plans, and this pressure can be sustained.***
- ***Wastage of water is reduced to negligible levels.***
- ***Improved productivity is enabled and sustained.***
- ***Land degradation from water-use practices is reduced to negligible levels.***
- ***The 'natural' condition of biodiversity is enhanced by improved water distribution.***
- ***The health of GAB springs and groundwater-dependent ecosystems is enhanced and sustained.***
- ***Cultural heritage assets associated with the GAB are recognised and protected.***

These aspirations form the basis for Resource Condition Targets in the GAB Strategic

Source 15.4.6 Aspirations for basin-wide management. GAB Consultative Council, 2008

Source 15.4.7 Before: a free-flowing bore drain; after: a capped bore

Management Plan Assessment and Reporting Framework.

The Great Artesian Basin Sustainability Initiative has assisted with the implementation of the SMP by providing finance to landholders to rehabilitate bores and replace bore drains with piped systems, as shown in Source 15.4.7.

Evaluation of the Strategic Management Plan

The plan has been assisting land managers to achieve more sustainable property and stock management. The success of such efforts can be judged by considering the criteria used in evaluation.

- ***Environmental criteria:*** The water savings are substantial and in many places the water pressure is on the rise. Some springs have started flowing again, restoring the aquatic habitat and ecosystem functioning. However, the rate of recovery in the western side of the basin is slow.
- ***Economic criteria:*** The financial assistance provided by the government has helped landholders to attend to their bores and reduce waste.
- ***Social criteria:*** The plan is supportive of landholders and they are receptive to the framework. The greatest conflict relates to coal seam gas extraction.

ACTIVITIES

Remembering and understanding

1 List the states and territory in which the GAB is located.
2 Explain how groundwater moves through the GAB.
3 Describe the process of fracking.
4 Assess the significance of the GAB to Aboriginal peoples.
5 What has been the impact of Europeans on the GAB?

Applying and analysing

6 Why will it take millions of years for the GAB to be replenished?

Evaluating and creating

7 **a** Complete a KWL chart about coal seam gas extraction.
b Conduct a class debate on the following topic: 'Coal seam gas extraction should be banned from northern Australia.'
8 Refer to Source 15.4.2. Using the internet, research groundwater movement in the GAB. Redraw the diagram and replace the labels with textboxes providing more detailed explanations.

Case study: The Pangani River Basin

The Pangani River Basin

The Pangani River Basin is one of the most productive areas of Tanzania. It is fed by snowmelt from Africa's highest mountain, Mount Kilimanjaro, and, just like the mountain, it is feeling the adverse impacts of climate change. There is currently not enough water to meet demands in the basin and conflicts are emerging between various water users.

The Pangani River Basin drains a large area in north-eastern Tanzania along the border with Kenya (see Source 15.5.1). The source of water is rainfall on the mountains and snowmelt from Mount Kilimanjaro. The major threats to water security are environmental degradation, climate change and increased usage.

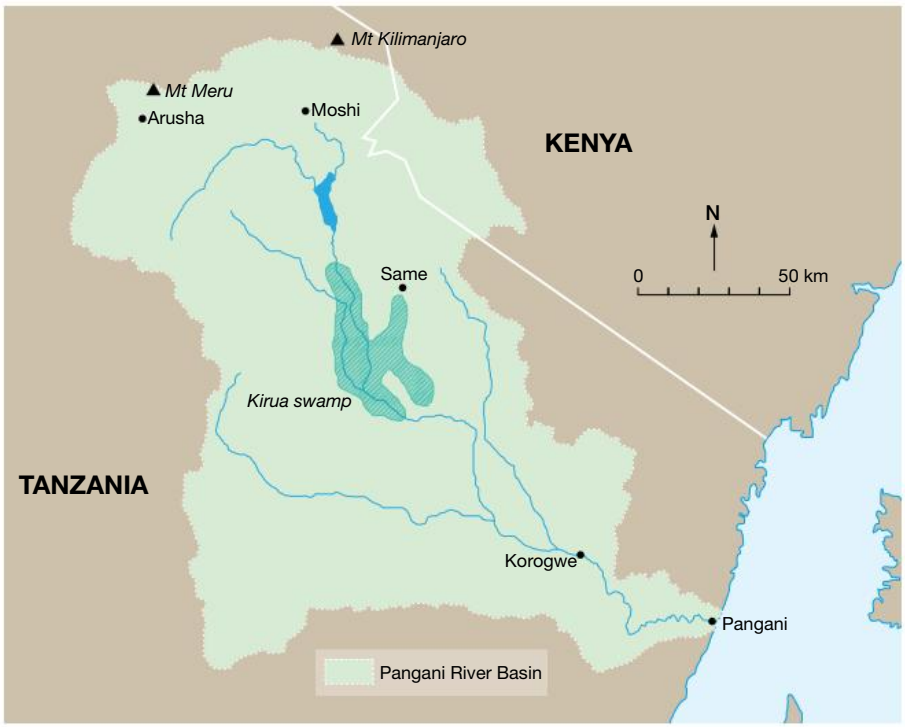
Water usage in the Pangani River Basin

The Pangani River Basin has a population of 3.7 million people. Eighty per cent rely on agriculture for their livelihood. Most live in the highlands and foothills, where rainfall is higher. There is large-scale production of sugar, coffee and flowers, as well as small-scale growing of corn and rice. All these crops are, for the most part, irrigated. A large proportion of the farmers believe that they do not have enough access to water.

There are also many nomadic **pastoralists** who depend on livestock and are forced to move from place to place in search of water (see Source 15.5.2). The river provides a livelihood for some of the poorest people, who turn to fishing when crops fail (see Source 15.5.3). In addition, the basin also has four hydro-electric power facilities that supply 17 per cent of Tanzania's power needs.

Considerable conflict has arisen over water resources in Tanzania, the extent of which is evident in Source 15.5.3. Some conflicts have been quite violent, with farmers accusing pastoralists of destroying their livelihood, as herds of cattle eat and trample crops when heading to the river to drink.

Inland waters are already clearly over-allocated and this is without allowing for the vital needs of the basin's aquatic ecosystems and inland water environments.



Source 15.5.1 Location of the Pangani River Basin

Did you know?

Almost 90 per cent of the surface flow from the Pangani River is used for irrigation and hydro-electric power generation.

Source 15.5.2 Pastoralists and their cattle on the move, seeking water

Source 15.5.3 Conflicts in the Pangani River Basin

1	**Communities and conservationists:** In the highlands, conservationists conflict with the community. The establishment of national parks to conserve catchment areas and increase tourism has generated revenue. The farmers would like to use the conservation areas for farming and gathering fuelwood. The pastoralists would like to graze or move their livestock there.
2	**Upstream and downstream users:** Conflict is caused by higher allocation of water for highlands users, hence inadequate water for small farmers in the lowlands. There are complaints that the share for downstream users is not adequate.
3	**Hydro-electricity producers and other users:** Since the establishment of three hydro-electric power stations along the Pangani River, small-scale irrigators have complained that water rights were introduced to protect the power-generating plants.
4	**Communities and donor agencies:** The competition between donor agencies in the basin generates confusion in the community. They exacerbate water problems in the basin because they compete for the same resources.
5	**Farmers and pastoralists:** Conflict between these two groups is a result of an increase in the number of livestock in the basin. Cattle destroy natural vegetation and crops.
6	**Rural-urban competition:** Water pollution increases as the urban areas grow and as farmers use more chemical inputs to grow enough food to feed the fast-growing population.
7	**Communities and river basin authorities:** Communities are not satisfied, as they are not involved in making decisions when it comes to policy formulation.

Source 15.5.4 Fishing is very important for the survival of the poorest people in Tanzania.

Key challenges

Several studies have shown that the Pangani River Basin is already water-stressed. The river's flow has decreased dramatically in recent years and water demand is expected to double within a decade. The Pangani River Basin Management Project (PRBMP) identifies a number of challenges that need to be addressed. These include:

- frequent cycles of droughts and floods
- population and economic growth
- conflicts over access to water resources
- environmental degradation.

Deterioration of inland water environments

The rivers in the highlands of the basin are no longer perennial (that is, flowing all year). The Kirua swamp has, as a result, been reduced to a fraction of its original size due the over-extraction of water, which has prevented its flooding.

Impact of climate change

The overstretched water resources of the Pangani River Basin are also being adversely affected by climate change. The most visible effect is the diminishing snow on Mount Kilimanjaro. An increase in temperature of 1.8 to 3.6°C, increasing evaporation and decreasing rainfall would also result in a 6–10 per cent reduction in annual flow in the drainage basin. Meteorologists have already noted that the climate patterns are changing, trending towards shorter rainy seasons and more frequent and severe droughts.

Development and implementation of the project

In 2002, the PRBMP was established to manage the basin's water resources. As Tanzania is a developing country, it could only undertake such a project with financial support and technical expertise from a number of sources. These include the United Nations Development Programme (UNDP), the European Union, the Netherlands Development Organisation, and the International Union for Conservation of Nature (IUCN).

The project promotes Integrated Water Resource Management (IWRM), which involves the coordinated development and management of water, land and related resources, in order to support the equitable provision and wise governance of fresh water for livelihoods and to protect the environment for current and future generations. The maintenance of aquatic ecosystems is accorded the second-highest priority in water allocation over allocation of water for basic human needs.

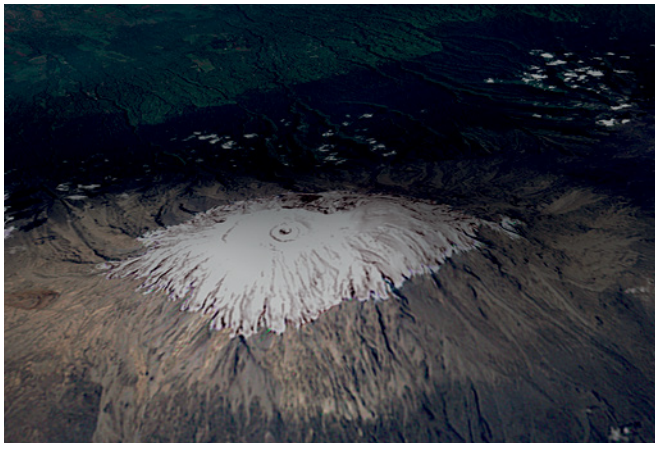
The emphasis is on the sustainable use of water and achievement of this requires people to consider the needs of other potential water users and take into account the overall distribution and scarcity of water across the entire river basin.

The PRMBP has undertaken to:

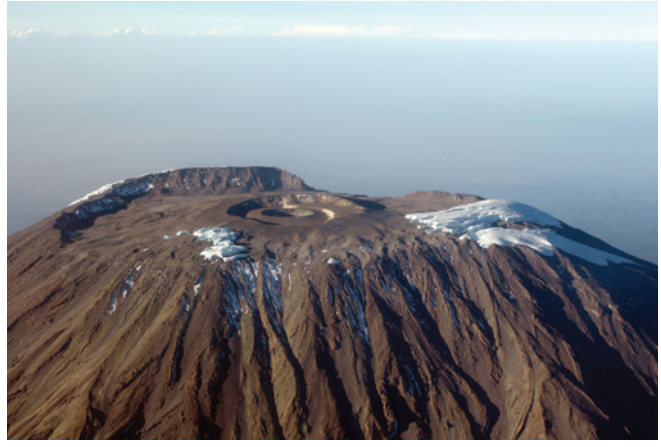
- generate technical information: an integrated flow assessment has been implemented to build an understanding of the hydrology of the river basin and the flow-related nature and functioning of the river ecosystem

Source 15.5.5 Melting ice on Kilimanjaro Mount Kilimanjaro is an important water source for the Pangani River Basin. With its famous glacial ice cap rapidly melting, Kilimanjaro has become an international symbol for climate change. It is predicted that its ice cap will be completely gone by 2025.

1993



2009



- develop participatory forums: the establishment of catchment associations and community-led projects will enhance conflict resolution in the basin, as people are being consulted and participating in decision-making.

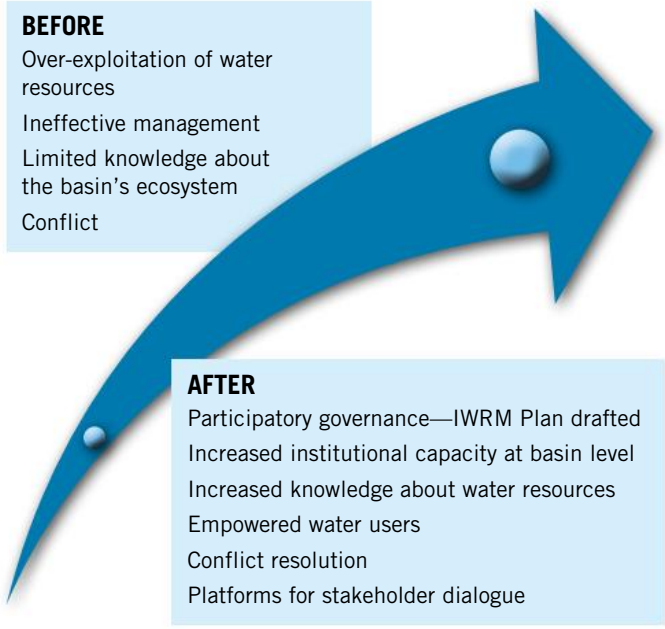
The full development and implementation of the plans for the project goes beyond simply allocating water to one or more water-use sectors (see Source 15.5.6). To truly move towards sustainability is far more complex and will occur over a considerable time span.

Evaluation of the project

The success can be judged by considering the criteria used in evaluations:

- ***Environmental criteria:*** Tanzania has begun raising awareness about climate change impacts, as well as assessing and adjusting the management of water resources. However, there is currently not enough water in the basin to meet demands for the people, let alone allow for environmental flows.
- ***Economic criteria:*** International funding has enabled research and generation of important technical information about the basin. However, the high level of poverty in the region puts a lot of pressure on people desperate to support themselves. Their actions can have a negative impact on inland waters.
- ***Social criteria:*** The PRBMP is certainly socially inclusive; it has, for example, developed participatory community forums. However, conflict driven by poverty is still rife in some areas and a number of deaths have occurred in the struggle between the small farmers and the pastoralists.

Source 15.5.6 Changes in the Pangani River Basin



ACTIVITIES

Remembering and understanding

1 Describe the drainage of the Pangani River Basin.
2 Explain why the highlands are favoured for agriculture.
3 Identify the challenges being faced by the Pangani River Basin Management Project.
4 Explain the impact of climate change on river flows in the Pangani River Basin.

Applying and analysing

5 Study Source 15.5.3. List the conflicts in the Pangani River Basin and decide if each conflict has a social, economic or environmental impact. Note that some conflicts will have more than one impact.

Evaluating and creating

6 Study Source 15.5.1. Describe the location of the Pangani River Basin. Find out what Mount Kilimanjaro's elevation and altitude are, and explain why it has snow on its summit.

Inquiry tasks

Change over time in the GAB

The inland water of the Great Artesian Basin is a resource of national importance. Historically, artesian water was vital for the development of northern Australia, but viability of flows must be ensured for the future wellbeing of the region and its communities.

Using the information in unit 15.4 on the Great Artesian Basin, create a flow diagram or a timeline (without clear dates) to show the changes that have taken place in the GAB from Aboriginal habitation to present day.

Who says what?

The Pangani River Basin is one of the most productive areas of Tanzania. However, there is currently not enough water to meet demands in the basin and conflicts are emerging between various water users. Table 15.5.3 in unit 15.5 on the The Pangani River Basin lists various groups that have an interest in the Pangani Basin.

Form groups of three or four. Choose one of the seven conflict groups from the table and prepare a short argument about why the needs of that particular group should be put ahead of the other six groups.

At the end of the discussion with your group members, rank the seven conflict groups from most to least important.

After completing the group work write a long paragraph discussing the possible long-term future of the Pangani River Basin.

Western Australian wetlands

The Ramsar Convention is an international treaty on the conservation of important wetlands that was first adopted on 2 February 1971. World Wetlands Day is celebrated on that date each year to raise public awareness about the importance and value of wetlands.

Australia has 65 Ramsar sites, 12 of them in Western Australia. To help demonstrate the vital role of wetlands in your state, design some promotional material that could be used to raise awareness about the importance and value of wetlands, as part of the World Wetlands Day.

Research the Western Australia Ramsar sites and choose one of the following options to showcase:

- one important Ramsar wetlands site and its local and state importance
- the 12 Ramsar sites in Western Australia and their local and global importance.

Examples of promotional material that you could create include a poster, slideshow, brochure, or advertisement.

Source 15.6.1 World Wetlands Day is celebrated every year on 2 February. This day marks the date of the adoption of the Convention on Wetlands on 2 February 1971, in the Iranian city of Ramsar on the shores of the Caspian Sea. Since 1997, the Ramsar Secretariat has provided outreach materials to help raise public awareness about the importance and value of wetlands.

River system assessment

Using the case studies in this chapter as a guide, choose a Western Australia river system and write an environmental assessment in the form of a short report.

Use the following headings and questions to help guide the analysis.

State of water

- How is it? (An assessment based on the ecological quality of the water and levels of nutrients, pesticides, heavy metals)
- How much is there? (An assessment based on data on run-off, availability, demands and any evidence of water stress)

Time-based trends

- Is it getting better or worse?
- Is it within or outside agreed limits?

Problems or issues effecting the health of the river system

- Pressures on the environment from:
  - humans and their domestic-based uses
  - industry
  - agricultural uses

Policies and actions

- Are there policies in place to work on solutions?
- Are they working towards targets?

GLOSSARY

aquiclude an impermeable body of rock or stratum of sediment that acts as a barrier to the flow of groundwater

aquifer an underground layer of water-bearing permeable rock or unconsolidated materials from which groundwater can be extracted

ecosystem approach a management approach that integrates the management of land, water and living resources in ways that promote conservation and sustainable use in an equitable way

endemic native to a particular place

eutrophication a process by which water bodies receive excess nutrients that stimulate excessive plant growth

fracking the process of creating fractures in rock strata by injecting fluid into cracks to force them further open; the process allows more oil and gas to flow out of the rock strata and into a bore, from where they can be extracted

groundwater water held underground in the soil or in pores and crevices in rock

hydrologic cycle the circulation of water between the earth's oceans, atmosphere and land, involving precipitation as rain and snow, drainage in streams and rivers, and a return to the atmosphere through evaporation and transpiration

overland flow the water flow that occurs when the soil is infiltrated to full capacity and excess water flows over the land

pastoralist a livestock farmer

stream flow the flow of water in streams, rivers and other channels; a major element of the water cycle

transboundary crossing at least one political border, either a border within a country or an international boundary

watertable the level below which the ground is saturated with water

Index

Index

H

I

J

Index

Index