Environmental Systems and Societies

for the IB Diploma Programme

3rd Edition

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1 Foundation

Topic 1.1 Perspectives

Guiding questions

How do different perspectives develop?

How do perspectives affect the decisions we make concerning environmental issues?

1.1.1 A perspective is how a particular situation is viewed and understood by an individual. It is based on a mix of personal and collective assumptions, values and beliefs.
1.1.2 Perspectives are informed and justified by sociocultural norms, scientific understandings, laws, religion, economic conditions, local and global events, and lived experience, among other factors.
1.1.3 Values are qualities or principles that people feel have worth and importance in life.
1.1.4 The values that underpin our perspectives can be seen in our communication and actions with the wider community. The values held by organizations can be seen through advertisements, media, policies and actions.
1.1.5 Values surveys can be used to investigate the perspectives shown by a particular social group towards environmental issues.
1.1.6 Worldviews are the lenses shared by groups of people through which they perceive, make sense of and act within their environment. They shape people's values and perspectives through culture, philosophy, ideology, religion and politics.
1.1.7 An environmental value system is a model that shows the inputs affecting our perspectives and the outputs resulting from our perspectives.
1.1.8 Environmental perspectives (worldviews) can be classified into the broad categories of technocentric, anthropocentric and ecocentric.
1.1.9 Perspectives and the beliefs that underpin them change over time in all societies. This can be influenced by government or non-governmental organization (NGO) campaigns or through social and demographic change.
1.1.10 The development of the environmental movement has been influenced by individuals, literature, the media, major environmental disasters, international agreements, new technologies and scientific discoveries.

1.1.1 A perspective is how a particular situation is viewed and understood

Perspectives are how particular situations are viewed and understood by an individual. *Perspectives* are based on a mix of personal and collective assumptions, values and beliefs.

Before the photo in Figure 1.1 was taken, the Earth had seemed vast, with almost limitless resources. But once people saw the image of Earth suspended in space, with the moon much larger in the foreground, they gained an appreciation of the vulnerability of the planet and its uniqueness in the Solar System and the Universe beyond.

Activity

The NASA missions of the 1960s and 1970s produced memorable images of the Earth that had never been seen before.

Few photos can have had a greater impact than the one shown in Figure 1.1, which was taken by NASA's Apollo 8 mission on 24 December 1968.

Figure 1.1 Earthrise from the Moon. This photograph was taken during the Apollo 8 mission of 21–27 December 1968.

What thoughts and ideas does this image inspire? Take a moment to write down your thoughts.

Now think about the following questions:

1. How might the image shown in Figure 1.1 have affected the public viewpoint or perspectives for the people who first saw it?
2. The Earth is known as a 'Goldilocks planet'. Why do you think this may be so? Find out why the terms 'Goldilocks planet' or 'Goldilocks zone' are used.
3. What issues are being caused by humanity on planet Earth?
4. Are these issues being solved? If not, why not?

TOK

What challenges are raised by the dissemination of knowledge?

The nineteenth-century British fairy tale *Goldilocks and the Three Bears* has become associated with the concept of ideal conditions.

Liquid water is one of the necessities for life. The metaphor 'Goldilocks planet' or 'Goldilocks zone' describes a planet or region in which the temperatures are neither too hot nor too cold for liquid water to exist. These conditions are determined by the distance between the planet and its nearest star.

Metaphors are often used to explain complex scientific ideas in a simple way. Scientists also use metaphors to develop hypotheses, interpret results and discuss scientific phenomena. Metaphors are only effective in communities where their meaning is understood. One of the challenges of disseminating knowledge is using language and contexts that are understood by all. Western nations will know *Goldilocks and the Three Bears* and the idea of conditions that are 'just right' but is it truly worldwide knowledge?

The image changed peoples' **perspectives** of the Earth and the life that exists on it. A perspective is the way in which an individual views and understands a particular situation. Perspectives are based on a range of personal and collective assumptions, values and beliefs. The image in Figure 1.1 and other images taken of the Earth from space led to a greater understanding of its fragility and the limitation of natural resources and were instrumental in the development of the environmental movement (page x). Personal perspectives give rise to a wide range of different positions on environmental issues and on social ones. Perspectives also influence people's choices and actions.

1.1.2 Informing and justifying perspectives

Perspectives are informed and justified by sociocultural norms, scientific understandings, laws, religion and economic conditions. Perspectives are also affected by local and global events and lived experience, among other factors. Take, for

Figure 1.2 Coal mine near Gillette, Wyoming, USA.

example, someone who is brought up in a coal-mining town in the United States of America (USA). Coal continues to be a major source of energy in the USA (Figure 1.2), despite many alternative sources of energy and the known impact of burning fossil fuels on the environment. The two largest coal mines in the USA are the North Antelope Rochelle and Black Thunder mines in Wyoming. Together, the two mines produced 22% of total coal production in the USA in 2022. The nearest city to North Antelope Rochelle mine is Gillette, Campbell County, the so-called 'Energy Capital of the Nation.' There are other mines near Gillette, including the Eagle Butte mine that is located 11 km north of Gillette. One in three households in Campbell County includes a household member who works in the coal mine or support services and therefore relies either directly or indirectly on the coal industry for income. A person from Gillette may see the role of the mine as an important employment opportunity for the local population. They would also be concerned about the reduction in coal use throughout the USA, which has led to a decline in the local economy.

Figure 1.3 Tropical islands and atolls in the Maldives, Indian Ocean.

Now take, in contrast, an individual island from the Maldives (Figure 1.3). The islands that make up the country extend more than 820 km from north to south and 130 km from east to west. The islands have an average elevation of only 2 m above sea level and so the Maldives is one of the lowest-lying countries in the world. No ground surface is higher than 3 m above sea level and 80% of the land area is less than 1 m above the average sea level. Due to climate change, the sea level in and around the Maldives has been rising at a rate of 0.8–1.6 mm per year since 1950. Because most of the land mass is only slightly above sea level, small changes in sea level can have extensive effects, leading to flooding and loss of land. Rising seas threaten homes and industries near the coast. More than 90 of the 187 inhabited Maldives islands experience annual floods.

The life experience of a person whose home is regularly flooded due to rising tides is going to have an effect on their perspective on the use of fossil fuels that is very different to that of a person from a mining town in the USA. The combustion of fossil fuels such as coal results in the emission of greenhouse gases such as carbon dioxide (see Topic X, page x). These greenhouse gases contribute to global warming and climate change. A person from the Maldives, who has direct knowledge and experience of the effects of climate change, may have the perspective that climate change is an important factor that is affecting the way they live their daily life and that urgent action is needed to mitigate the effects of global warming.

It is important to distinguish between a perspective and an **argument**. An argument is different from a perspective. Arguments are made to support a personally held perspective or to counter a different one.

1.1.3 Values

Values are qualities or principles that people feel have worth and importance in life.

Values are deeply held beliefs focused on the things that people see as important or desirable in life. Values can be moral, cultural, economic or environmental. Values affect people's priorities, judgements, perspectives and choices. Values are individually held but are shared with, and shaped by, others in a community.

1.1.4 Showing values

A person who has had direct experience of climate change, such as rising sea levels and flooding of their home or business, may form personal values that reflect this lived experience. They may see the decisions about action needed to tackle climate change through the reduction of fossil fuels use and a move to more sustainable generation of energy as an important priority. In contrast, someone who has a family member who has lost their job due to reduction in coal mining may have different values that are instead centred around the ongoing use of fossil fuels to maintain the local economy.

The values that underpin our perspectives can be seen in our communication and actions with the wider community. For example, an individual in the Maldives may be involved with local action to promote the threat from climate change and the need to move to renewable sources of energy away from fossil fuels. The values held by businesses and other organizations can be seen through advertisements, media, policies and actions. For example, businesses that value sustainable development (see page x) will promote their use of sustainable products.

1.1.5 Values surveys

Values surveys can be used to investigate the values underpinning the perspectives shown by a particular social group. They can be used to recognize the values underpinning the perspectives toward a particular environmental issue and assess how these values are likely to impact the issue.

A **questionnaire** is a document that asks the same questions of all individuals in the sample. A questionnaire is a very useful tool for investigating patterns, trends and attitudes. It is often used to complement information obtained by other techniques such as observation. Questionnaire surveys involve both setting questions and obtaining answers.

Your perspectives affect the philosophy of your life through which you perceive and make sense of the world. They structure your beliefs, which in turn form the foundations of your values. Your values then influence the judgements and choices you make, which in turn affect the actions you take.

Different values often lead to **tensions** between individuals and organizations.

You need to know how to design surveys that can be used with a particular social group to investigate the values underpinning their perspectives toward a particular environmental issue and assess how these values are likely to impact the issue.

Questionnaires can be used to correlate worldviews/perspectives with attitudes toward any particular environmental or sustainability issues.

HL c Environmental ethics

SKILLS

You need to be able to design and carry out questionnaires, surveys and interviews.

The questionnaire survey is probably the most widely used method of obtaining primary data in human geography. In the wider world, questionnaires are used for a variety of purposes, including market research by manufacturing and retail companies and testing public opinion prior to political elections.

Questionnaires may contain:

- closed questions with a fixed choice of answers to generate data for easy analysis
- open questions with space to give any answer for more detailed individual answers
- scale questions that are used to ask respondents whether they agree or disagree with several statements, rate items on a scale or to rank items in order of importance or preference.

One of the most important decisions is how many questionnaires you are going to use in your sample. Remember, if you do not have a large enough number of questionnaire responses, you will not be able to draw reliable conclusions. For extensive studies, such as those used for an Internal Assessment (IA), 25 questionnaires is probably the minimum you would need to draw reasonable conclusions, as this enables you to assess variation in the data. On the other hand, in larger studies, it is unlikely you would have time to carry out more than 100 questionnaires unless you were collecting data as part of a group.

A good questionnaire:

- has a limited number of questions that take no more than a few minutes to answer
- is clearly set out so that the questioner can move quickly from one question to the next as people do not like to be kept waiting; the careful use of tick boxes can help meet this objective
- is carefully worded so that the respondents are clear about the meaning of each question
- follows a logical sequence so that respondents can see 'where the questionnaire is going'; if a questionnaire is too complicated and long-winded people may decide to stop halfway through
- avoids questions that are too personal
- begins with the quickest questions to answer and leaves the longer/more difficult questions to the end
- reminds the questioner to thank respondents for their cooperation.

Questionnaires have some disadvantages. For example:

- The response rate may be lower than you anticipate. Many people may not want to cooperate for a variety of reasons. Some people will simply be too busy, others may be uneasy about talking to strangers, while some people may be concerned about the possibility of identity theft.
- Research has indicated that people do not always provide accurate answers in questionnaires. Some people are tempted to give the answer that they think the questioner wants to hear or the answer they think reflects well on them.
- Questionnaires are not suitable to investigate long and complex issues.

As with other forms of data collection, it is advisable to carry out a brief pilot survey first. It could be that some words or questions that you find easy to understand cause problems for other people. Amending the questionnaire in the light of the pilot survey before you begin the questionnaire in full will make everything go much more smoothly.

Traditionally, questionnaires were delivered using the following methods:

- Approaching people in the street or in another public place.
- Posting questionnaires to people. This method is costly and experience shows that response rates are rarely above 30%. Another disadvantage of this method is that it is not possible to ask for clarification if some responses are unclear.

Do not work alone when collecting data by approaching people in a public place, even if you are working on an individual ESS project. Always work in small groups when carrying out questionnaires or interviews or at least have one of your classmates visible. Always make sure you are carrying a fully charged cellphone so you can contact other people if needed.

Today, **online collaborative survey tools** exist to devise and collect data from questionnaires. Examples include SurveyMonkey, SmartSurvey and Google Forms, among others. These tools support group collaboration and allow users to work together effectively and collate data. Features of these tools focus on collaboration, coordination and communication. To create an online questionnaire, you must first decide on your research goals: what are your survey objectives and the expected outcomes? You then create a list of questions, invite participants (via email), gather the responses from those who have taken part, analyze the results and form a conclusion for your final report.

Environmental attitudes: Shades of green

Attitudes towards the environment can vary a great deal depending on age, gender, place in society, upbringing, education and many other factors. Showing different environmental values visually in graph or chart form can summarize complex information in a simple yet effective way. A good way of illustrating different attitudes to the environment is by using different shades of green to represent different environmental values, with a pale shade indicating less awareness and a darker shade indicating greater engagement. This was done in an online survey of homeowners in the USA (see Figure 1.4).

The survey shows that those homeowners represented by the darker shades make up a minority of the total population meaning that environmental concerns are limited and not yet a compelling driver of green choices. Dividing personal value systems into shades of green provides a visual way of summarizing the views of society in relation to the environment.

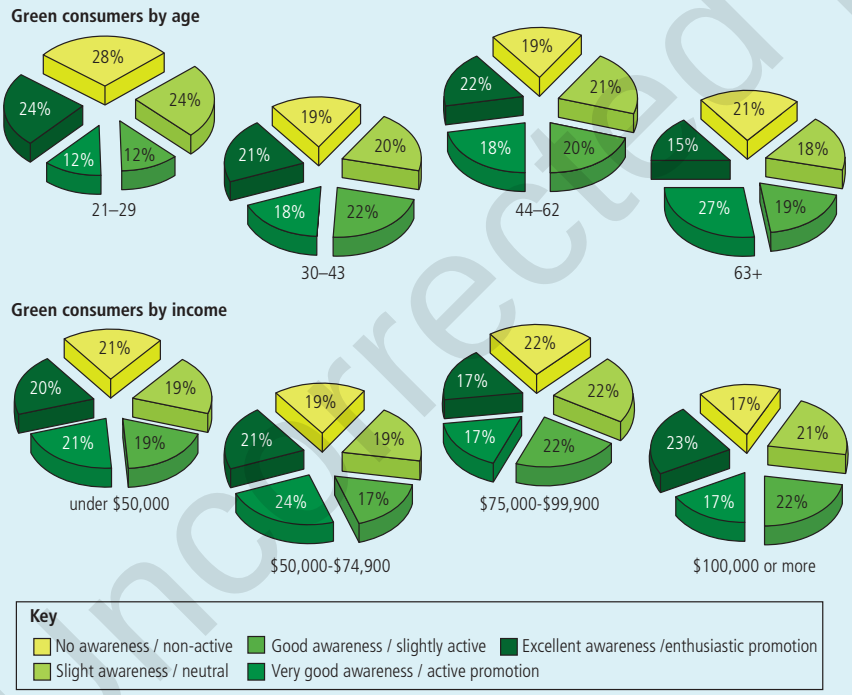


Figure 1.4 Pie charts with different shades of green to represent different environmental values.

Sample questionnaire

The questionnaire accessed from this page of your eBook can be used to explore the environmental attitudes of different groups in your school or community.

Data can be analyzed with an appropriate statistical tool (for examples, see pages x–x).

You can also use and develop 'behaviour over time' graphs to show lifestyle changes (see pages x–x).

Interviews

Interviews consist of a series of pre-planned oral questions by the interviewer and oral responses by the research participant. Interviews involve more detailed interactions than questionnaires, so will generally involve talking to a relatively small number of people. For example, a study aiming to find out why six different companies chose to locate on a specific industrial estate might involve interviews with the directors of those six companies. An interview involves a greater depth of discussion than a questionnaire, although you should still have pre-planned questions. Interviews enable you to ask open-ended questions that generate data that is more detailed than those generated by questionnaires. Interviews are thus more likely to produce unexpected responses than questionnaires.

A good interview will be based on preparatory stages like those used for a questionnaire. As the number of people interviewed will be relatively small, it is even more important that you are able to justify your choice of sample. For example, if you are investigating a controversial issue where there are three obvious interest groups, you will need to ensure that your interviews give equal coverage to each group. It can be a good idea to record interviews but you should always ask the interviewee's permission first. It might be the case that a potential respondent may not be able to offer a face-to-face interview but is instead willing to offer a telephone/online interview. This should not present a problem, although it will be important to state that this was a telephone interview in your analysis and to note any limitations that this mode of communication created compared to your face-to-face interviews.

Activity

Develop a questionnaire to explore the environmental attitudes of different groups in your school or community. The questionnaire could be used to examine different age ranges (as shown in the study above), different genders, or some other factor.

Plot pie charts to illustrate your data.

- What conclusions can you draw from your data? Discuss your results.
- What were the problems with your method? What effect(s) may these limitations have had on your data? How could you improve the method if you were to do the survey again?

1.1.6 Worldviews

Worldviews are the lenses shared by groups of people through which they perceive, make sense of, and act within, their environment. This contrasts with perspectives, which is how a particular situation is viewed and understood by an individual. Worldviews refer to how societies see the world and how people's values and perspectives are shaped through culture, philosophy, ideology, religion and politics.

In the past, perspectives would have been influenced by a worldview that was established within a local community or context. With the development of the Internet and social media, a person's perspective can be influenced by a far greater variety of worldviews than just those of the local community. Consequently, models that attempt to classify perspectives, though helpful, are invariably inaccurate as individuals often have a complex mix of positions.

Different types of society have different worldviews.

A worldview or **paradigm** shapes the way a group of people perceive and evaluate environmental issues. It is influenced by the cultural, religious, economic and socio-political context.

Example – Abrahamic and Buddhist societies

The view of the environment in Abrahamic religions is one of stewardship, where humans have a role of responsibility towards the Earth. For example, the Genesis story suggests that God gave the planet to humans as a gift. Other biblical stories indicate that humanity should make the most of this gift as stewards.

This contrasts with the Buddhist approach to the environment, which sees the human being as an intrinsic part of nature rather than a steward. Buddhism is sometimes seen as an ecological philosophy. This is because of its worldview rather than anything that appears in its writings, which are not explicitly environmental. Buddhism emphasizes human interrelationships with all other parts of nature and supports the belief that considering ourselves as isolated from the rest of nature is unrealistic.

Reincarnation, the belief that human consciousness (or spirit) is immortal and can be reborn after death in either human or animal form, emphasizes humanity's interconnectedness with nature. Buddhists believe that nothing has a fixed and independent existence; all things are without self-existence and are impermanent. From this perspective, humans are intimately related to their environment and cannot exist separately from the rest of the world. Recognizing this principle of interdependence inspires an attitude of humility and responsibility towards the environment.

TOK

In what ways do values affect the production of knowledge?

Different societies have different worldviews. Individual and societal understanding and interpretation of data regarding environmental issues is influenced by the perspectives and values of individuals within society. Can there be such a thing as an unbiased view of the environment? Can we ever expect to establish a balanced view of global environmental issues?

Differences in worldviews are influenced by differences in culture and society. A society's worldview influences the actions taken by its citizens in response to environmental issues. Buddhist monks in Thailand, for example, are part of a growing environmental movement (see Figure 1.5). They are involved in ecological conservation projects and teach ecologically sound practices among Thai farmers. Unsustainable development based on rapid economic development is seen to be one of the primary causes of Thailand's environmental crisis. The respect in which Buddhist monks are held means that their views are listened to and can have a profound effect on the population.

Figure 1.5 Buddhist monks are frequently active in a range of campaigns including forest conservation in Thailand.

HL c Environmental ethics

TOK

What is the relationship between personal experience and knowledge?

Assumptions, values and beliefs and worldviews can affect the way in which we view the world. These are influenced by the way we were raised by our parents, by education, by our friends and by the society in which we live.

1.1.7 Environmental value systems

An EVS might be considered as a *system* in the sense that it may be influenced by education, experience, culture and media (inputs) and involves a set of interrelated assumptions, values and arguments that can generate judgements, positions, choices and courses of action (outputs).

An **environmental value system (EVS)** is a model (see page x) showing the **inputs** affecting our perspectives and the **outputs** resulting from our perspectives.

The systems approach is explained in detail on pages x–x. An EVS, like all systems, is an assembly of parts and the relationships between them, which together constitute a whole. Systems have inputs, outputs and storages. The outputs are determined by the processing of inputs and generate decisions and evaluations.

EVS inputs are:

- education
- worldviews
- the media
- cultural influences
- economic factors
- sociopolitical factors (the interaction of social and political factors; for example, communism, capitalism)
- religious texts and doctrine.

EVS outputs are:

- judgements
- positions
- choices
- courses of action on how to act regarding environmental issues.

A society is a group of individuals who share some common characteristics, such as geographical location, cultural background, historical period, religious perspectives, value system and so on.

Inputs of information to individuals within societies are processed or transformed into changed perceptions of the environment and altered decisions about how best to act on environmental matters. At their strongest, such information flows cause people to take direct action to alleviate environmental concerns. It is possible that inputs transfer through the individual or group without processing but it is unlikely that an input has no effect at all.

EVSs act within **social systems**. Social systems are more general than **ecosystems**. There are lots of different types of social system: class-based; democratic or authoritarian; patriarchal (male dominance) or matriarchal (female dominance); religion-based; industrial (technology-based) or agrarian (agriculture-based); capitalist or communist. Rather than the flows of energy and matter we see in

ecosystems (Topic 2, pages x–x), social systems have flows of information, ideas and people. Both ecosystems and social systems exist at different scales and have common features such as feedback and equilibrium (pages x–x). Trophic levels exist in ecosystems, while in social systems there are social levels within society. Both systems contain consumers and producers. Producers in social systems are responsible for new input such as ideas, films, books and documentaries. Consumers absorb and process this information.

1.1.8 Environmental perspectives (worldviews) and their categories

Environmental perspectives (worldviews) can be classified into the broad categories of **technocentric**, **anthropocentric** and **ecocentric** (Figure 1.6).

Technocentrists believe that technology will keep pace with and provide solutions to environmental problems. Ecocentrists are nature-centred and distrust modern large-scale technology; they prefer to work with natural environmental systems to solve problems and to do this before problems get out of control. The anthropocentrists include both technocentric and ecocentric viewpoints. An anthropocentrist believes humans must sustainably manage the global system and this might be through taxes, environmental regulation and legislation. Debate is encouraged so that a consensual, pragmatic approach to solving environmental problems can be reached.

The technocentrist approach is sometimes termed a **cornucopian** view – a belief in the unending resourcefulness of humans and their ability to control their environment. This leads to an optimistic view about the state of the world. Ecocentrists, in contrast, see themselves as subject to nature rather than in control of it. Ecocentrists see a world with limited resources where growth needs to be controlled so that only beneficial growth occurs. At one end of the ecocentrist worldview are the self-reliance soft ecologists – those who reject materialism and have a conservative view regarding environmental problem-solving. At the other end are the **deep ecologists**, such as Norwegian philosopher Arne Næss, who put more value on nature than humanity.

Although there are extremes at either end of this range (i.e. deep ecologists at the ecocentric end of the spectrum and cornucopians at the technocentric end), in practice EVSs vary greatly with culture and time and rarely fit simply or perfectly into any single classification.

The categories of EVSs outlined here are not exclusive and a variety of alternative schemes exist. There are many ways to classify our perspectives. Although these models are useful, they are also imperfect because individuals often have a complex range of positions that change over time and context.

In the ESS course, anthropocentrism is considered as 'humans sustainably managing the global system' (through regulations, policies, incentives and so on). The common dictionary definition is simply 'humans are the central/most significant entities in the world'. This could lead to an understanding of anthropocentrism as cornucopian, which is not necessarily true.

HL a Environmental law

HL c Environmental ethics

Figure 1.6 The range of environmental value systems.

Environmental Value System

Ecocentrism (nature centred)

An ecocentric viewpoint integrates social, spiritual, and environmental dimensions into a holistic ideal. It puts ecology and nature as central to humanity, and emphasizes a less materialistic approach to life with greater self-sufficiency of societies. An ecocentric viewpoint prioritizes biorights, emphasizes the importance of education and encourages self-restraint in human behaviour.

Deep ecologists

1 Intrinsic importance of nature for the humanity of man.

2 Ecological (and other natural) laws dictate human morality.

3 Biorights – the right of endangered species or unique landscapes to remain unmolested.

Self-reliance soft ecologists

1 Emphasis on smallness of scale and hence community identity in settlement, work, and leisure.

2 Integration of concepts of work and leisure through a process of personal and communal improvement.

3 Importance of participation in community affairs, and of guarantees of the rights of minority interests. Participation seen as both a continuing education and a political function.

4 Lack of faith in modern large-scale technology and its associated demands on elitist expertise, central state authority, and inherently anti-democratic institutions.

5 Implication that materialism for its own sake is wrong and that economic growth can be geared to providing for the basic needs of those below subsistence levels.

Anthropocentrism (people centred)

An anthropocentric viewpoint believes humans must sustainably manage the global system. This might be through the use of taxes, environmental regulation, and legislation. Debate would be encouraged to reach a consensual, pragmatic approach to solving environmental problems.

Environmental managers

1 Belief that economic growth and resource exploitation can continue assuming:
- **a** suitable economic adjustments to taxes, fees, etc.
- **b** improvements in the legal rights to a minimum level of environmental quality
- **c** compensation arrangements satisfactory to those who experience adverse environmental and/or social effects.

2 Acceptance of new project appraisal techniques and decision review arrangements to allow for wider discussion or genuine search for consensus among representative groups of interested parties.

Technocentrism (technology centred)

A technocentric viewpoint believes that technological developments can provide solutions to environmental problems. This is a consequence of a largely optimistic view of the role humans can play in improving the lot of humanity. Scientific research is encouraged in order to form policies and understand how systems can be controlled, manipulated or changed to solve resource depletion. A pro-growth agenda is deemed necessary for society's improvement.

Cornucopians

1 Belief that people can always find a way out of any difficulties, whether political, scientific, or technological.

2 Acceptance that pro-growth goals define the rationality of project appraisal and policy formulation.

3 Optimism about the ability of humans to improve the lot of the world's people.

4 Faith that scientific and technological expertise provides the basic foundation for advice on matters pertaining to economic growth, and public health and safety.

5 Suspicion of attempts to widen basis for participation and lengthy discussion in project appraisal and policy review.

6 Belief that all impediments can be overcome given a will, ingenuity, and sufficient resources arising out of growth.

Example – A technocentrist approach to reducing carbon dioxide emissions

Energy and gasoline companies have been developing technological solutions to carbon dioxide emissions to alleviate global warming. Carbon capture and storage (CCS) techniques involve taking the carbon dioxide produced from industrial processes and storing it in various ways (Figure 1.7). This means carbon dioxide is not released into the atmosphere and does not contribute to global warming. A BP project at In Salah in Algeria aims to store 17 million tonnes of carbon dioxide – an emission reduction equivalent to removing 4 million cars from the road. Such projects have yet to be made available on a large-scale commercial basis because of the costs involved.

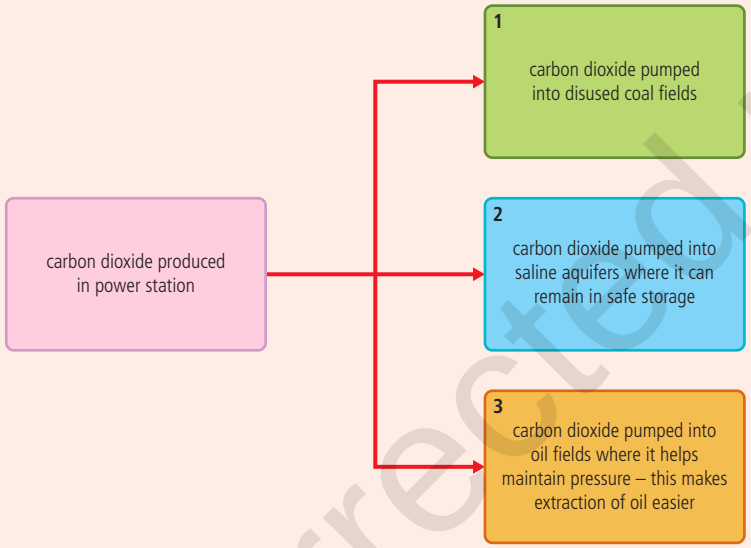


Figure 1.7 Options for carbon capture and storage.

Ecosystems often cross national boundaries and conflict may arise from the clash of different value systems about exploitation of resources. For example, the migration of wildlife across borders in southern Africa may lead to conflict due to the differing attitudes towards culling in different southern African countries. This is discussed further in Topic 2.

Decision-making and EVSs

EVSs influence our decision-making processes. Let's consider the contrasting perspectives of ecocentrism and technocentrism in relation to two specific cases.

Environmental challenges posed by the extensive use of fossil fuels

Fossil fuels have problems associated with their use. The gases produced during their combustion can contribute to global warming. The cornucopian belief in the resourcefulness of humans and their ability to control their environment would lead to a technocentric solution, where science is used to find a useful alternative, for example hydrogen fuel cells. As *technocentrists*, cornucopians would see this as a good example of resource replacement as an environmentally damaging industry can be replaced by an alternative one. Rather than changing their lifestyles to reduce the use of fuel, cornucopians would look to develop technology to reduce the output of carbon dioxide from fossil fuel use. A cornucopian would say that economic systems have a vested interest in being efficient so the existing problems will self-correct given enough time, and that development (which requires energy) will increase standards of living thus increasing demands for a healthy environment. They believe that scientific efforts should be devoted to removing carbon dioxide from the atmosphere and reducing its release,

Technocentrism assumes all environmental issues can be resolved through technology. Anthropocentrism splits into a wide variety of views but generally views humankind as being the central, most important element of existence. Ecocentrism sees the natural world as having preeminent importance and intrinsic value.

rather than curtailing economic growth. A technocentrist would predict that market pressure would eventually result in lowering of carbon dioxide emission levels. An *ecocentrist* approach to the same problem would call for the reduction of greenhouse gases through curtailing existing gas-emitting industry, even if this restricts economic growth.

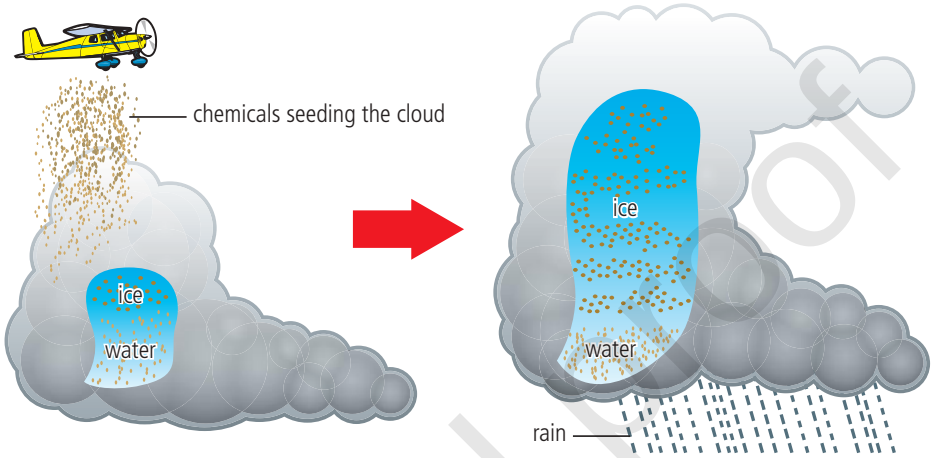


Figure 1.8 Chemicals such as silver iodide or frozen carbon dioxide are released into clouds. They offer surfaces around which water and ice crystals form. When they are large enough, they fall out of the cloud and become rain.

Approaches to increasing demand for water resources

The *technocentric* resource manager would suggest that future needs can be met by technology, innovation and the ability to use untapped reserves. They would support such measures as the removal of freshwater from seawater (desalination) if they were near an ocean, iceberg capture and transport, wastewater purification, synthetic water production (water made through chemical reactions or hydrogen fuel cell technology), cloud seeding (Figure 1.8) and extraction of water from deep aquifers. They would also look at innovative ways to reduce the use of water, both in industry and at a domestic level.

The *ecocentric* resource manager would highlight the overuse and misuse of water. They would encourage the conservation of water and greater recycling and say that water use should be monitored to ensure that it remained within sustainable limits. An ecocentrist would encourage water use that had few detrimental impacts on habitat, wildlife and the environment.

1.1.9 Change in perspectives

Figure 1.9 The crew of Greenpeace's flagship, the Rainbow Warrior, holding 'Save the Whales' banner, 1978.

Perspectives, and the beliefs that underpin them, change over time in all societies. Protests about environmental disasters and concern about the unsustainable use of the Earth's resources have led to the formation of pressure groups, both local and international. All these groups have at their centre the belief that every person has a responsibility to look after the planet, for themselves and for future generations, through wise management of natural resources. The action of such groups has resulted in increased media coverage, which in turn has raised public awareness about these issues. One of the most influential of these groups is Greenpeace. Greenpeace is a non-governmental organization (NGO). NGOs are not run, funded or influenced by the governments of any country. Greenpeace was founded in the early 1970s and was made famous in 1975 by mounting an anti-whaling campaign. The campaign actively confronted Soviet whalers in the Pacific Ocean off the Californian coast and eventually developed into the 'Save the Whale' campaign (see Figure 1.9), which made

news headlines around the world and became the blueprint for future environmental campaigns. This campaign, among others, changed the public's perception of whale hunting and led to its eventual ban.

Perspectives and beliefs can also alter through the role of demographic change. Demographic change describes the changes in human population size and structure caused by changes in birth rates, death rates, differences in the economic factors, urbanization and patterns of migration. In the USA, for example, Millennials (young adults born from 1981 to 1996) became the largest adult generation in 2019. Recent studies have shown that 75% of Millennials are environmentally conscious, are notable for high levels of engagement with the issue of climate change and are willing to change their buying habits to favour environmentally-friendly products. 90% of Millennials are interested in pursuing sustainable investments. These figures contrast with preceding generations, who are less likely to have such a high engagement with environmental issues. Increased vegetarianism and a move away from meat in the diet (see Topic 5, 5.2.10, page x) is another indicator of the role that demographic change has in changing perspectives and beliefs.

Figure 1.10 shows the results of a study that indicate that younger generations are more engaged with global warming than older generations. The generations are categorized as: Millennials (born between 1981 and 1996), Generation X (born between 1965 and 1980), Baby Boomers (born between 1946 and 1964) and Silent (born between 1928 and 1945).

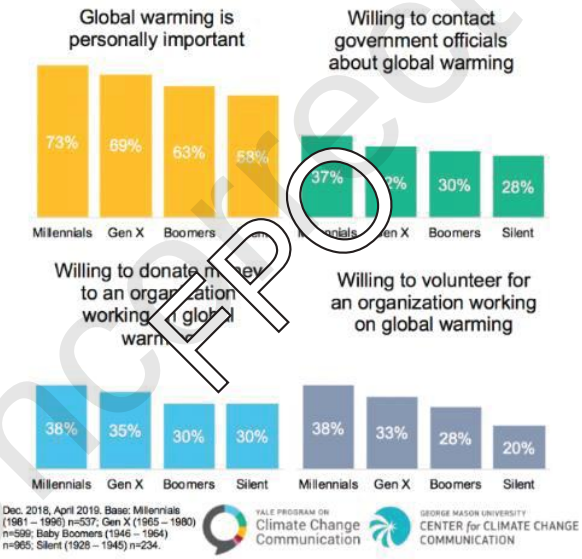


Figure 1.10 Generational changes in attitudes towards the environment.

Activity

Study the data presented in Figure 1.10. Summarize the findings of the study. What do the data reveal about how perspectives and the beliefs that underpin them have changed over time in society?

What are the environmental attitudes of the most recent generations, Generation Z (born between 1997 and 2012) and Generation Alpha (born between 2013 and 2025)? Can you find data on these generations, to compare with the outcomes shown in Figure 1.10?

Perspectives, and the beliefs that underpin them, change over time in all societies. These can be influenced by government or NGO campaigns or through social and demographic change.

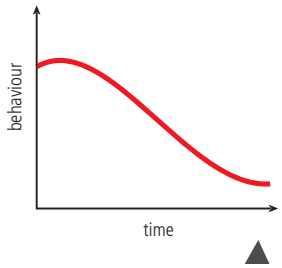


Figure 1.11 A behaviour-over-time graph.

SKILLS

Behaviour-over-time graphs (BoTGs) are line graphs that show how a factor changes over time. Time is plotted along the horizontal axis and the 'behaviour' (the factor that changes over time) is plotted on the vertical axis (Figure 1.11). Examples could include specific changes such as smoking, littering and eating meat, or how traditional lifestyles in Indigenous cultures are being replaced by modern ones.

Data concerning behavioural changes can be complex and the big picture can sometimes be lost in the detail. BoTGs enable overall trends to be clearly seen and interpreted. These graphs help you focus on patterns of change over time rather than on single events.

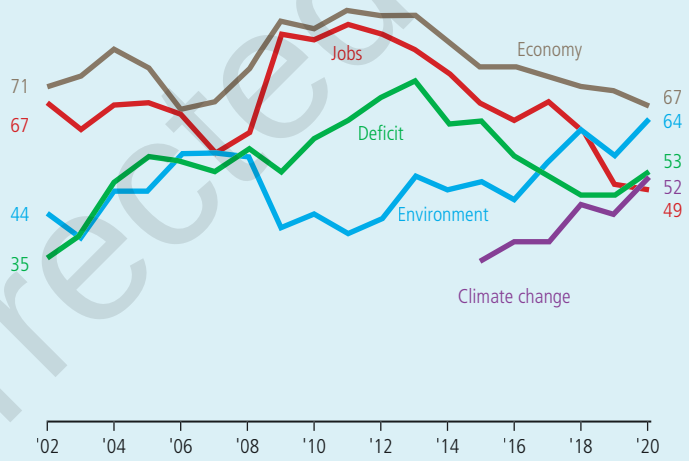
BoTGs do not require special equipment. They are drawn freehand using pencil and paper, or on a tablet or laptop. If you have access to data (figures relating to a specific factor) then graph paper may be needed. It is important to avoid getting caught up on lots of detail. The aim of these graphs is to focus on patterns of change rather than on isolated events or small details.

In BoTGs, the change may be linear or exponential (increasing or decreasing), or the pattern may fluctuate.

Once a BoTG has been constructed, the following questions can be asked:

1. What is changing? What is the variable being graphed?
2. How is it changing? How is the trend described?
3. Why is it changing? What are the causes driving the behavioural changes shown in the graph?
4. What is the significance? Why is the change important?

Figure 1.12 shows changing attitudes in the USA towards top priorities for the country.



The graph shows trends for the percentage of individuals who said that the economy, jobs, the environment or climate change should be a top priority for the President and Congress. In 2020, the American public placed a lower priority on economic and job concerns than it did a few years previously. While at the same time, environmental protection and global climate change increased in priority on the public's agenda for the President and Congress. These changes coincided with a strengthening economy and the visibility of the impacts of climate change within the country, such as an increase in the incidence of tornados and flooding.

Figure 1.12 Behaviour-over-time graph for attitudes in the USA towards the economy, jobs and the environment, between 2002 and 2020.

HL a Environmental law
HL c Environmental ethics

Significant historical influences on the development of the environmental movement have come from individuals, literature, the media, major environmental disasters, international agreements, new technologies and scientific discoveries. You need to know at least one example of each of the different influences.

1.1.10 The development of the environmental movement

Some people think that the photo from NASA's Apollo 8 mission of the Earth suspended in space (page x) was the beginning of the **environmental movement** – the worldwide campaign to raise awareness and coordinate action to tackle the negative effects that humans are having on the planet. But although the image was pivotal in helping to highlight environmental issues, the environmental movement existed before this milestone photograph.

The environmental movement advocates sustainable development through changes in public policy and individual behaviour. The modern movement owes much to developments in the latter part of the 20th century, although its history stretches back for as long as humans have been faced with environmental issues. Some significant moments in the environmental movement are outlined in the following section.

HL c Environmental ethics

Individuals

'*Be the change you want to see in the world*' is a quote often used to encourage people to act in a sustainable and environmentally friendly way. It is based on a statement made by former Indian Prime Minister, Mahatma Gandhi, '*We but mirror the world…If we could change ourselves, the tendencies in the world would also change.*' There are many individuals who have lived by this advice and have played a significant role in the development of the environmental movement.

Figure 1.13a

Greta Thunberg was only 15 when she first held a 'school strike to protect the climate'. This then became a global movement.

Figure 1.13b

Rachel Carson, a pioneering marine scientist, was first to highlight the environmental hazards posed by insecticides.

Figure 1.13c

Jane Goodall was the first person to study chimpanzees in the wild and has set up a global community conservation organization that advances her vision.

Figure 1.13d

Maxima Acuña de Chaupe, a subsistence farmer in Peru's northern highlands, is well known throughout Latin America for standing up against a multinational mining company that tried to remove her from her land. The mining company planned to mine two lakes on her land for copper and gold, and to drain two other lakes. One of the lakes would have been turned into a waste storage pit, threatening the water supply to any land downstream, including a high-altitude biologically diverse wetland. Despite intimidation and threats, Maxima stood her ground and refused to give up her land. She was awarded the Goldman Environmental Prize in 2016.

Read more about Maxima Acuña de Chaupe's activism on the Goldman Prize website, Meet the Winners:

FPO

Read more about Robert D. Bullard's work here:

FPO

Figure 1.14a

Wangari Maathai (Figure 1.14) was an environmentalist from Kenya. She founded the Green Belt Movement. By the early 2000s this movement had resulted in 30 million trees being planted and had provided jobs and secured firewood for rural communities. She targeted women-led groups, ensuring that trees were planted on their farms and in school and church compounds conserving their environment and improving their quality of life. She was awarded the Nobel Peace Prize in 2004.

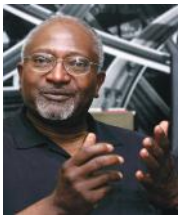


Figure 1.14b

Robert D. Bullard is known as the 'Father of Environmental Justice' and has spent four decades acting as an advocate of environmental and racial justice across the USA. He has published 18 books including on sustainable development.

Figure 1.14c

Dato' Seri Tengku Dr Zainal Adlin Bin Tengku Mahamood has initiated several conservation programs, including in biodiverse regions in East Malaysia. He was involved with the conception and creation of the 'Heart of Borneo: Three Countries One Conservation Vision', which seeks to preserve the central, pristine ecosystems in the centre of Borneo. It unites Malaysia, Indonesia and Brunei in protecting one of the largest transboundary rainforests remaining in the world.

Literature

In 1962, American biologist Rachel Carson's influential book *Silent Spring* was published. It remains one of the most influential books of the environmental movement. The case against chemical pollution was strongly made as Carson documented the harmful effects of pesticides along food chains to top predators. The book led to widespread concerns about the use of pesticides and the pollution of the environment.

Many other significant publications have also contributed to the environmental movement. In 1972, the Club of Rome – a global think tank of academics, civil servants, diplomats and industrialists that first met in Rome – published *The Limits to Growth*. This report examined the consequences of a rapidly growing world population on finite natural resources. It has sold 30 million copies in more than 30 translations and has become the best-selling environmental book in history.

James Lovelock's book *Gaia* (1979) proposed the hypothesis that the Earth is a living organism, with self-regulatory mechanisms that maintain climatic and biological conditions. He saw the actions of humanity upsetting this balance with potentially catastrophic outcomes. Subsequent books, up to the present day, have developed these ideas.

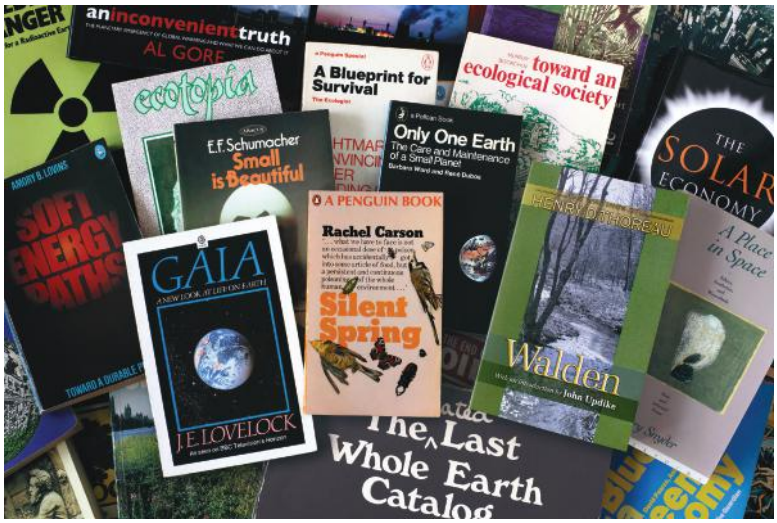


Figure 1.15 A selection of books on environmental issues, including some that have influenced the Green movement.

Mark Lynas is a leading environmentalist, who has written five major books on the environment: *High Tide* (2004), *Six Degrees* (2008), *The God Species* (2011), *Seeds of Science* (2018) and *Our Final Warning* (2020). His books discuss the impact of humanity on planet Earth and rapid changes that are needed to avoid irreversible tipping points.

Kate Raworth's book, *Doughnut Economics: seven ways to think like a 21st century economist*, presents a radical rethinking of economics. The 'doughnut' represents a safe space for humanity, between social and planetary boundaries (see pages x–x, this Topic). Her book presents how doughnut economics can result in a sustainable future for humans and the planet.

The book *This Changes Everything: Capitalism vs. the Climate*, by Naomi Klein, explains why market-driven capitalism cannot fix the climate crises and that fundamental economic and social changes are needed.

Popular books such as *Silent Spring* and films such as Al Gore's *An inconvenient truth*, can provide knowledge about environmental issues on a global scale. People who previously had limited understanding of the environment are given the information to enable them to make their own minds up about global issues. But do they have enough information to see all sides of the argument? A good education would certainly put these arguments in a wider context. Is it a problem that many people receive only one side of the argument?

The media

In 2006, the film *An Inconvenient Truth* examined the issues surrounding climate change and increased awareness of environmental concerns (Figure 1.16). The publicity surrounding the film meant that more people than ever became aware of global warming. The film's message was spread widely and rapidly through the Internet making the arguments about global warming very accessible to a wider audience and raising the profile of the environmental movement worldwide. The film was supported by a book of the same title that included hard scientific evidence to support its claims.

Figure 1.16 Earth Day is celebrated simultaneously around the world, encouraging people to participate in environmental campaigns both locally and globally.

The 2019 film *Dark Waters* tells the real-life story of Rob Bilott, a lawyer who took on one of the world's largest chemical corporations after discovering that the company was polluting drinking water with a harmful chemical.

Earth Day is marked each year on 22 April, coordinated globally via the Internet and other media. It was founded in 1970 by Gaylord Nelson, a US Senator from Wisconsin, after he had seen the effects of a massive oil spill in Santa Barbara, California during 1969. The purpose of Earth Day is to highlight and promote the role of responsible consumption in achieving sustainability. By creating a day that celebrated the Earth, he saw a way of moving environmental protection more centrally onto the national political agenda.

To learn more about Earth Day, go to this website:

FPO

Figure 1.17 Japanese Environment Minister Nobuteru Ishihara (R) and Achim Steiner (L), UN Environment Programme (UNEP) Executive Director, lay flowers on the memorial for the victims of 1950s mercury poisoning at Minamata city on 9 October, 2013.

Major environmental disasters

In 1956, a new disease was discovered in Minamata City in Japan. It was named **Minamata disease** and was found to be linked to the release of methyl mercury into the wastewater produced by the Chisso Corporation's chemical factory. The mercury accumulated in shellfish and fish along the coast. The contaminated fish and shellfish were eaten by the local population and caused mercury poisoning. The symptoms were neurological, including numbness of the hands, muscle weakness and damage to hearing, speech and vision. In extreme cases, Minamata disease led to insanity, paralysis and death. The pollution also led to birth defects in newborn children (Figure 1.17).

The Minamata Convention on mercury is a global treaty to protect the environment and human health from the harmful effects of mercury. It is a legally binding UN agreement adopted in 2013 and brought into force on 16 August 2017.

At midnight on 3 December 1984, the Union Carbide pesticide plant in the Indian city of Bhopal released 42 tonnes of the toxic gas methyl isocyanate. This happened because one of the tanks involved with processing the gas had overheated and burst. Some 500,000 people were exposed to the gas. It has been estimated that between 8,000 and 10,000 people died within the first 72 hours following the exposure and that up to 25,000 have died since from gas-related diseases (Figure 1.18).

Figure 1.18 The Bhopal disaster made headlines around the world. Despite protests, little has been done for the families of the victims.

Early in the morning of 26 April 1986, reactor number four at the **Chernobyl** plant in Ukraine (then part of the Soviet Union) exploded. A plume of highly radioactive dust (fallout) was sent into the atmosphere and fell over an extensive area (Figure 1.19). Large areas of Ukraine, Belarus and Russia were badly contaminated. The disaster resulted in the evacuation and resettlement of over 336,000 people. The fallout caused an increased incidence of cancers in the most exposed areas.

Figure 1.19 Photo of damage to the Chernobyl nuclear reactor, taken hours after the explosion.

The area immediately surrounding the plant, covering approximately 2600 km^2, remains under exclusion due to the high levels of radiation still present. The incident raised issues concerning the safety of Soviet nuclear power stations, but also the general safety of nuclear power. These worries remain to this day.

For many years, the Chernobyl disaster was the only major nuclear incident. That changed on 11 March 2011 when an earthquake in northern Japan caused a tsunami that hit the coastal **Fukushima** nuclear power plant, causing a meltdown in three of the six nuclear reactors (Figure 1.20). The damage resulted in radioactive material escaping into the sea. Following the incident, all 48 of the country's reactors were closed so that new safety checks could be done, leading to an increased dependence on fossil fuels. Before the Fukushima incident, the nuclear power plant had provided 30% of Japan's energy needs. Although the disaster at Fukushima was caused by specific local issues–the coastal location of the plant and the inadequacy of defenses for extreme tidal events such as tsunamis–the move away from nuclear power was replicated around the world. Germany, in particular, backtracked on its nuclear ambitions.

Figure 1.20 Satellite image of the Fukushima Daiichi nuclear power plant in Okuma, Japan, taken after the 2011 earthquake and tsunami.

On 15 January 2022, a leak from a pipeline during the discharge of oil at the La Pampilla Refinery, off the coast of Peru, resulted in nearly 12,000 barrels of crude oil spilling into one of the world's most diverse marine ecosystems. The oil slick affected 25 beaches, polluted three protected marine reserves and covered 1187 km^2 of sea and 1740 km^2 of coastal land. The oil spill killed invertebrates, fish and seabirds, left more than 1000 seabirds coated with oil and impacted marine mammals such as endangered sea otters. More than 700,000 people are thought to have been affected by the spill and

at least 5000 people are thought to have lost their livelihoods. The refinery was owned by the Spanish company Repsol, who have been fined for the way they dealt with the spill and for damages done to people and the environment.

International agreements

In 1972, the United Nations (UN) held its first major conference on international environmental issues in Stockholm, Sweden – the **UN Conference on the Human Environment**, also known as the **Stockholm Conference**. It examined how human activity was affecting the global environment. Countries needed to think about how they could improve the living standards of their people without adding pollution, habitat destruction and species extinction. The conference led to the **Stockholm Declaration**, which played a pivotal role in setting targets and shaping action at both an international and local level. These early initiatives ultimately led to the **Rio Earth Summit** in 1992, coordinated by the UN (Figure 1.21), producing **Agenda 21** and the **Rio Declaration**. The Stockholm Declaration and subsequent global summits have played a leading role in shaping attitudes to sustainability.

In 1987, a report by the **UN World Commission on Environment and Development** (WCED) was published, intended as a follow-up to the Stockholm Conference. The report, titled ***Our Common Future***, took the ideas from Stockholm and developed them further. It linked environmental concerns to development and sought to promote sustainable development through international collaboration. It also placed environmental issues firmly on the political agenda. *Our Common Future* is also known as the **Brundtland Report** after the Chair of the WCED, former Norwegian Prime Minister, Gro Harlem Brundtland.

The publication of *Our Common Future* and the work of the WCED provided the groundwork for UN's Earth Summit at Rio in 1992. The conference was unprecedentedly large for a UN conference – it was attended by 172 nations. The wide uptake and international focus meant that its impact was likely to be felt across the world. The summit's radical message was that nothing less than a transformation of our attitudes and behaviour towards environmental issues would bring about the necessary changes. The conference led to the adoption of Agenda 21 – a blueprint for action to achieve sustainable development worldwide (21 refers to the 21st century). Agenda 21 is a comprehensive plan of action to be taken globally, nationally and locally by organizations of the UN, governments and environmental groups in every area in which humans affect the environment. It was adopted by more than 178 governments at the Earth Summit.

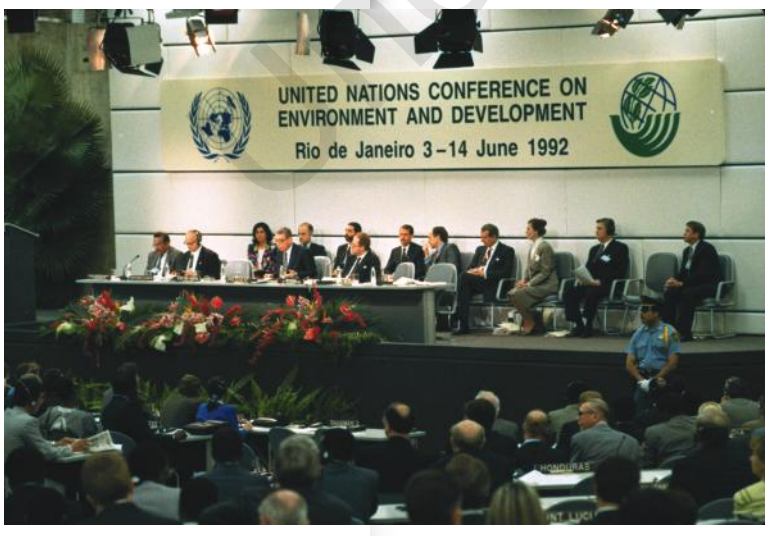


Figure 1.21 UN Conference on Environment and Development, Rio de Janeiro, Brazil, 3–14 June 1992. The platform: L to R: Deputy Secretary-General of the Conference Nitin Desai, Secretary-General Maurice Strong, UN Secretary General Boutros Boutros Ghali, Brazilian President Fernando Collor de Mello.

The Earth Summit changed attitudes to sustainability on a global scale and changed the way in which people perceived economic growth. It encouraged people to move away from the idea that economic growth should occur at the expense of the environment and encouraged them to think of the indirect values of ecosystems, such as ecosystem services. It also was important for emphasizing

the relationships between human rights, population, social development, women and human settlements and the need for environmentally sustainable development. The summit's emphasis was on change in attitude affecting all economic activities, ensuring that its impact could be extensive. The conference meant that environmental issues came to be seen as mainstream rather than the preserve of a few environmental activists. Achievements made included steps being made towards preserving the world's biodiversity through the **Convention on Biological Diversity** (**CBD**) and steps to address the enhanced greenhouse effect via the **UN Framework Convention on Climate Change** (**UNFCCC**). These steps in turn led to the establishment of the **Kyoto Protocol** and the **Paris Agreement**.

Both the CBD and UNFCCC are legally binding conventions and both are governed by the **Conference of the Parties (COP)**, which meets either annually or biennially to assess the success and future directions of the Convention. For example, COP15 of the CBD took place over a two-year period with part 1 being held in Kunming, China (October 2021) and part 2 being held in Montreal, Canada (December 2022). COP16 is planned to be held in Turkey in 2024. COP15 of the UNFCCC took place in Copenhagen, Denmark and COP28 of the UNFCCC took place in Dubai, United Arab Emirates (UAE) in December 2023. The **Copenhagen Accord** was a document produced at COP15 of the UNFCCC, in which attending parties were asked to 'take note' of the concerns raised about climate change. However, this document was not legally binding.

i Acronyms are formed from the first letter or first few letters of each word in a phrase or title. Some examples include the Convention on Biological Diversity (CBD), the UN Framework Convention on Climate Change (UNFCCC) and the Conference of the Parties (COP). Using such shortened forms can speed up communication. International conventions widely use acronyms.

Activity

Details of the COPs for both the CBD and UNFCCC can be found by searching for 'COP' at the following websites:

CBD: 

UNFCCC: 

Select one COP for the CBD and one for the UNFCCC.

1. What were the major themes at these meetings of the COP?
2. What were the outcomes of the meetings?
3. How did the outcomes impact the subsequent COP?

Discuss your findings with others in your class. Which COPs did they research? Were any of the COPs especially significant in terms of their discussion and outcomes?

Some national and state governments have legislated or advised that local authorities take steps to implement Agenda 21. Known as '**Local Agenda 21**' (LA21), these strategies apply the philosophy of the Earth Summit at the local level. Each country is urged to develop an LA21 policy, with the agenda set by the community itself rather than by central or local government, as ownership and involvement of any initiatives by society at large is most likely to be successful.

Read more about the IPCC here:

The IPCC synthesis report on climate change, 2023, can be accessed here:

Major landmarks in the modern environmental movement include: Minamata, Rachel Carson's *Silent Spring*, the 'Save the Whale' campaign, the Bhopal and Chernobyl disasters. These led to environmental pressure groups, both locally and globally; the concept of stewardship; and increased media coverage raising public awareness.

You need to cover a variety of significant historical influences that affected the environmental movement and be able to recall a minimum of one example from each of the categories above. It is a good idea to select a range of influences that includes both local and global examples. Examples may also be recent.

The 1992 Earth Summit was followed up 10 years later by the **Johannesburg World Summit on Sustainable Development**. The Johannesburg meeting looked mainly at social issues. Targets were set to reduce poverty and increase people's access to safe drinking water and sanitation (problems that cause death and disease in many developing countries).

In 2012, the UN Conference on Sustainable Development (UNCSD, or **Rio+20**) took place to commemorate the 20th anniversary of the Earth Summit. Rio+20 again brought governments, international institutions and major groups together to agree on a range of measures to reduce poverty while promoting good jobs, clean energy and a more sustainable and fair use of resources.

New technologies

The **Green Revolution** refers to a time between the 1940s and the late 1960s when developments in scientific research and technology in farming led to increased agricultural productivity worldwide. The Club of Rome (page 000) claimed in their report *The Limits to Growth* that within a century a mixture of human-made pollution and resource depletion would cause widespread population decline. But the intervention of the Green revolution meant that by 2000, world population had reached six billion and is predicted to rise to nearly nine billion by 2050. The intensification of agriculture raised many questions for the environmental movement (page x), as has the increase in human population (page x).

Other technological innovations have created alternatives to fossil fuels such as solar panels and wind turbines. These make the arguments proposed by environmentalists, that is, the need for a switch to more sustainable sources of energy, a real possibility and drives the environmental movement forward.

Scientific discoveries

Rachel Carson's work on pesticide toxicity, culminating in her book *Silent Spring* (see page x), led to a reassessment of the effect of human-made chemicals on the environment. Biodiversity loss has also shown the impact that humanity is having on the planet, promoting moves to conserve and protect species. In 2019, the UN's Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services reported that approximately one million animal and plant species were threatened with extinction, including more than 40% of amphibian species, nearly 33% of sharks, shark relatives and reef-forming corals and at least 33% of all marine mammals.

Challenge yourself

Think about your own perspectives and how they might influence your behaviour. What environmental issues affect you locally? What are your views on these issues? What has affected your perspectives and how does this influence how you act on a given issue?

List factors that have affected your perspectives and how these influence the way you respond to environmental issues. Now create a systems diagram to summarize this information – you may want to focus on your response to one environmental issue to help focus your ideas.

Engagement

1. Within your class, select an environmental issue. Divide yourselves into three groups – one group discusses technocentric solutions to the issue, another discusses anthropocentric solutions and the third discusses ecocentric solutions. Each group should develop arguments to support their perspective. Now debate the environmental issue within your class, from each of the different perspectives. You may want to select one person, or your teacher, to mediate the debate.
2. Design appropriately persuasive materials to advocate for an environmental or social cause within your school or college. Research the issue and develop arguments that promote the cause. Develop posters and information leaflets to disseminate the information within your community.
3. Using the knowledge acquired in this topic, advocate to show how personal actions can create change towards a more sustainable society.
4. Engage in discussing the role of politics, intergovernmental organizations (IGOs), NGOs and individuals (through social media) in solving an environmental problem. This could be through participating in a Model UN (MUN) group. You can find details of Model UN at the bottom of the English language version of the homepage:

   MUN:

The concept of *perspectives* provides a deeper understanding of worldviews and individual *perspectives* and their related value systems. Our value systems interact in complex ways with our decision-making abilities and actions with a real-world impact. Through understanding perspective and value systems, we are better positioned to consider how to make effective progress on complex sustainability issues.

Exercise

Q1. **Distinguish** between perspectives, values and worldviews.

Q2. **(a)** **State** what is meant by an *environmental value system (EVS)*.

(b) **List** three inputs and three outputs to an EVS.

Q3. **Distinguish** between ecocentric, anthropocentric and technocentric EVSs.

Q4. Perspectives, and the beliefs that underpin them, change over time in all societies. **Outline** how these changes can be shown.

Q5. **Explain** how the development of the environmental movement has been influenced by individuals, literature, the media, major environmental disasters, international agreements, new technologies and scientific discoveries.