



Theme 9

HL extension lenses

The HL lenses are discussed in an applied way in relation to specific sections of Themes 1–8. Here we briefly discuss the foundational information and overarching theory behind the three lenses: environmental law, economics and ethics.

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Guiding question

- How can environmental law help ensure the sustainable management of Earth systems?

HL.a.1–HL.a.2 and HL.a.5 Foundations of environmental law

The law is a legal framework or a set of rules consisting of policies, principles, directives and regulations to regulate human behaviour. It is created by social or governmental institutions at the international, national and local levels. Environmental laws safeguard the environment and sustainably maintain it for present and future generations. They regulate the way humans treat their environment. They may include rules for managing natural resources such as fisheries, forests and minerals to ensure they are used sustainably. For example, laws may set limits on the fishing of certain species to prevent overexploitation of the resource.

Similarly, laws can help to keep pollution under control, for example the bottle-deposit law that is currently implemented in more than 40 countries is targeted at reducing beverage container litter and the amount of solid waste going into landfills (see Topic 7.3.8, page 686). Regulations may also require factories to treat wastewater before releasing it into rivers (see Topic 4.4.8, page 393). Transboundary agreements such as the Paris Agreement, international treaties for the protection of biodiversity, and national carbon-emission policies such as carbon taxes and cap and trade, are introduced to keep carbon emissions under control. Environmental laws often require Environmental Impact Assessments (EIAs) for construction and development projects such as dams, flyovers and highways to minimize their negative impacts on the environment (see Topics 7.1.14–7.1.16 (pages 626–28, HL only)).

Concept

Systems and models

Environmental systems are complex and they require governance at a variety of levels to avoid the negative impacts of human activities and to maintain ecological balance. Environmental laws connect ecological processes, human activities and legal frameworks. Legal frameworks operate within large systemic contexts such as international laws and agreements, where they require countries to come together for a common cause. At the same time, countries have their own independent environmental guidelines and policies that are implemented at the national and local levels. Close cooperation between political organizations functioning at the national and local levels results in proper implementation of the laws.



Environmental constitutionalism brings together constitutional law, environmental rights, and international law. Nations are increasingly addressing environmental issues through their constitutions. Among the most important issues addressed through the constitutions are climate change issues, which almost every nation is facing. For example, Argentina implements its environmental legislation at the federal, provincial and municipal levels. Article 41 of the Argentine constitution clearly states that, 'All inhabitants are entitled to the right to a healthy and balanced environment fit for human development in order that productive activities shall meet present needs without endangering those of future generations; and shall have the duty to preserve it. As a first priority, environmental damage shall bring about the obligation to repair it according to law.' (source: Constitution of the Argentine Nation, www.biblioteca.jus.gov.ar/Argentina-Constitution.pdf). Based on this law, the nation facilitates sustainable use of natural resources, conservation of biodiversity, preservation of cultural heritage, and environmental education.



ATL ACTIVITY

Read or revisit the Real-world Example on the Navajo people and the uranium mines on page 660. In groups of three or four students, hold a discussion on the following points:

- What environmental issue is addressed in this Real-world Example?
- How does the case relate to environmental constitutionalism?
- What constitutional rights, if any, are involved?

Further reading: www.epa.gov/enforcement/case-summary-600-million-settlement-clean-94-abandoned-uranium-mines-navajo-nation

HL.a.6–HL.a.7 and HL.a.11 Environmental legal frameworks

Environmental laws can be drafted at local, national or international levels. Laws created internationally by a group of countries or those created nationally take precedence over local laws, which are more focused on regions, cities or towns.

■ International

Transboundary environmental issues require international agreements and bilateral agreements. One example is the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), which was adopted in 1973 and is governed by the United Nations. It legally binds member countries (parties) to implement measures that prevent the unsustainable trade of endangered species. Agreements like the Association of Southeast Asian Nations (ASEAN) Agreement on Transboundary Haze Pollution tackle issues like cross-border pollution, particularly concerning haze from forest fires. Similarly, the Food and Agriculture Organization (FAO) International Plan of Action addresses transboundary resource management, specifically targeting illegal, unreported, and unregulated fishing practices. These agreements involve multiple countries working together to combat environmental challenges that extend beyond national borders.

■ National

At the national level, laws, policies and regulations help in regulating human behaviour towards the environment. The Clean Air Act of the United States regulates air quality to protect the public from the harmful effects of air pollutants. It sets national air quality standards by giving

emission limits for SO₂ and NO₂. The law requires the development and enforcement of control measures to reduce air pollution. Similarly, the Environmental Management and Coordination Act of Kenya (1999) governs protection and conservation of the environment by environmental impact assessments, environmental audits, restoration orders, monitoring environmental offences, and imposing regulations. The Wildlife (Protection) Act of India (1972) provides protection and conservation of wildlife in India, including the establishment of protected areas and regulations on the hunting and trade of wildlife.

Local

Municipal corporations govern the waste collection and disposal laws in a city or town. All residents of that city are bound by the local laws and can be penalized if found guilty. Laws for waste segregation at source require residents to segregate their domestic waste into dry and wet waste before it is collected. This saves time and allows for proper waste disposal, resulting in much less waste going to the landfill. Barcelona in Spain has designated areas marked as 'superblocks', which are transformed into gardens, playgrounds or plazas. These areas are either vehicle-free zones in which vehicles are not allowed, or if they are allowed vehicles may not travel faster than 10 kph.



Concept

Perspectives

Granting legal personhood to natural entities indicates the perspective through which natural resources are viewed. From the legal perspective, it challenges the traditional notion that only humans and businesses can have legal rights and obligations. Granting legal rights to a natural entity such as a river or an ecosystem shifts the focus from their use value to their intrinsic value, emphasizing the need to protect them. This perspective links with indigenous knowledge systems that do not discriminate between humans and nature. It also demonstrates the ecocentric viewpoint by giving importance to nature before anything else, and the anthropocentric viewpoint by focusing on sustainable practices. Natural resources have rights to exist, flourish and regenerate. The concept of environmental stewardship is strengthened by granting personhood to natural entities. Some examples you could investigate include the Whanganui River and Mount Taranaki in New Zealand.



ATL ACTIVITY

- 1 Divide the class into three groups to represent international, national and local.
- 2 Each group must choose one of the environmental issues given below:
 - Transboundary pollution of air, water and garbage
 - Transboundary resource distribution and sharing
 - Littering due to single-use plastic
 - Poor air quality in a city
 - Improper waste management
 - Overexploitation of a resource.
- 3 Discuss the following points as a group:
 - What are the main causes of the environmental issue?
 - How can the law help to resolve the issue?
 - Who are the stakeholders involved and what are their responsibilities?
 - What actions or efforts will govern the successful implementation of the laws?
- 4 Each group then shares their thoughts on the chosen environmental issue with the class.

Common mistake

Personhood and personification are two different terms. Personification is the belief that an entity is living, while personhood grants the entity legal rights and obligations equivalent to a human person.

Link

More information about the need for global action to address transboundary environmental issues is available in Topic 6.3.1 (page 561). Topic 6.4.9 (page 599) discusses how the actions taken under the Montreal Protocol have prevented the boundary of stratospheric ozone depletion from being crossed. Topic 7.1.21 (page 631, HL only) discusses the Mekong River and its equitable use by China, Laos and Vietnam.

HL.a.3–HL.a.4 and HL.a.8–HL.a.10 Implementation of environmental laws

The term ‘environmental justice’ refers to the equitable exposure of all sections of society to environmental benefits and to negative environmental impacts. The long-term benefits for poor and marginalized communities are prioritized over the short-term benefits for a minority. A GDP-based economic development system can harm the environment as it will focus primarily on increasing economic gains. Environmental laws help to prevent overexploitation of natural resources by encouraging ethical practices. Economically powerful stakeholders can make it challenging to pass environmental laws. For example, industries may lobby against stricter regulations concerning pollution and emission limits by resisting the installation of pollution-control equipment or by not adhering to pollution-control limits. This may lead to greater pollution of air and water.

REAL-WORLD EXAMPLE

ExxonMobil

ExxonMobil, one of the world’s largest oil and gas companies, has faced scrutiny for its role in funding climate-change denial campaigns and lobbying against environmental regulations. According to a study published in the journal *Science* and reported by ABC in January 2023, internal documents revealed that ExxonMobil had awareness of the link between fossil fuel emissions and climate change as early as the 1970s, but continued to publicly downplay the risks of global warming.

The *Guardian* newspaper reported that the company had been found to have engaged in lobbying efforts to undermine climate science and had funded industry-backed think tanks and advocacy groups that cast doubt on the scientific consensus on climate change. Climate scientists point to the huge impact of this action, claiming that the company’s lobbying efforts have hindered progress on environmental legislation and perpetuated dependence on fossil fuels.

(Sources: <https://science.org/doi/10.1126/science.abk0063>, <https://abc.net.au/news/2023-01-13/exxon-mobil-accurately-predicted-global-warming/101854578>, <https://theguardian.com/us-news/2023/sep/14/exxonmobil-documents-wall-street-journal-climate-science>, <https://theguardian.com/business/2021/nov/04/us-oil-giants-top-list-lobby-offenders-exxonmobile-chevron-toyota>)



ATL ACTIVITY

After reading the Real-world Example about ExxonMobil, split into small groups, each allotted one of the questions given below:

- How effective are current environmental laws in addressing corporate accountability for actions that contribute to climate change?
- Are there any international legal avenues for holding major corporate polluters accountable for their role in spreading misinformation about climate change?
- Should corporations have obligations under environmental law to disclose information about the environmental risks associated with their activities?
- How can international cooperation and coordination be enhanced to hold multinational corporations accountable for environmental violations across borders?

Take 15–20 minutes to look for detailed information relating to your question and note down the points you uncover.

Once you have finished consolidating your points, present your group's viewpoint to the class and respond to any questions that may follow.

Effective implementation of environmental laws depends on strict legal administration, acceptance by society, and sufficient funding. Governing bodies that can monitor compliance and impose penalties for violations are a vital part of the implementation process. For the laws to be successful, the members of a society must be willing to make small lifestyle changes based on the requirements. Adequate funding is required for providing environmental protection measures, infrastructure development, conducting relevant research, running awareness programmes, monitoring and enforcement.

UN conferences produce international conventions (agreements) that are legally binding for all signatories, and protocols that may become legally binding. These agreements and protocols may be challenging and slow to be put in action because they require the participation and consent of all participating countries (parties). Many times, the governments of countries may have different priorities and therefore may not be willing to cooperate. For example, Iran, Libya, Eritrea and Yemen did not sign the Paris Agreement aimed at reducing global warming (see Topic 6.3.14 (page 590, HL only)). Iran is highly dependent on its oil reserves for revenue, which makes it difficult for it to reduce its emissions. Newly industrialized countries might not be in a position to shift their focus towards renewable energy sources due to lack of financial support or infrastructure, and their economic development status.

Organizations such as IUCN use precise data comprising a variety of parameters to assign a conservation status to a species. This helps in monitoring the changes in species population and designing conservation methods. CITES focuses on species-based conservation.

International bodies involved in shaping environmental law include the International Court of Justice, the International Tribunal for the Law of the Sea, and the European Court of Justice. These bodies are faced with many challenges, such as determining fair compensation for environmental law violations. This is difficult because environmental damage can be hard to measure, and the effects might not be evident right away. Finding the right balance between holding offenders accountable and preventing or repairing environmental harm remains a complex task for international judicial systems.

Link

More information about the IUCN and the IUCN Red List is available in Topic 3.2.4 (page 226). Topic 3.2.5 (page 228) discusses CITES. Topics 4.2.10 (page 313, HL only) and 4.2.16 (page 320, HL only) cover how water stress can arise from transboundary disputes. Topic 6.3.10 (page 582, HL only) discusses the challenges in implementing climate management and intervention strategies.

HL.a.12 Strategies for sustainability

Legal and economic strategies can play a vital role in promoting sustainable environmental management. While legal frameworks establish rules and regulations to guide human behaviour towards nature, economic frameworks assign values to ecosystem services and address their degradation. Accurate valuation of the ecosystem services is a struggle, as is attaining stakeholder agreement and enforcing laws. When these strategies are integrated, they are better able to serve the requirement. Laws impose fines for illegal activities while encouraging compliance to rules. They may also cover some of the costs of environmental damage. For example, illegal logging is a major issue in countries such as Brazil. Governments have therefore implemented laws with fines and penalties for individuals and companies that engage in unauthorized deforestation. These fines help in stopping illegal logging activities and incentivize compliance with forestry regulations. The revenue generated from these fines is used for reforestation and conservation efforts.



ATL ACTIVITY

In pairs, explore the relationship between legal frameworks and economic strategies for promoting sustainable environmental management.

- Create a concept map, with 'Legal framework' and 'Economic strategies' as the central concepts.
- Branch out from these central concepts to depict sub-concepts, relationships and examples.
- Explain your concept map to the class.

Link

More information about issues of equity is available in Topic 6.2.15 (page 556, HL only). Topic 6.3.7 (page 578, HL only) outlines some global strategies to address climate change.

Concept

Sustainability

Sustainability can be achieved through measures that balance environmental protection and economic viability. Putting a value on economic services aids in shifting the perspective towards their conservation. Integration of legal and economic strategies highlights the importance of a holistic approach to environmental management that considers both ecological and economic factors.

Guiding questions

- How can environmental economics ensure sustainability of the Earth's systems?
- How do different perspectives impact the type of economics governments and societies run?

HL.b.1–HL.b.5 Fundamentals of environmental economics

Economics is a social science that allows us to understand how humans use resources, the choices that motivate their behaviour, and how these choices change in relation to the availability of resources.

Environmental economics is a relatively new field in economics that examines how economic activities impact the environment. Even though economists of the late eighteenth century were aware of the environmental effects of economic activities, the term gained popularity around the 1960s. Humans continuously use and exploit the environment to extract maximum benefits in terms of goods and services for consumption and financial gain. The main aim of environmental economics is to create a balance between economic development and quality of the environment through decision making and policy implementation for sustainable resource management.

Concept

Perspectives

The economic concepts of scarcity and incentives affect how people view natural resources and the environment as a whole. Resources such as clean water, air, forests, and major food production systems are essential for human well-being and economic development. When these resources are limited compared human desires, the need for conservation becomes prominent. Scarcity prompts individuals, firms, and governments to make decisions about resource allocation, consumption patterns, and environmental conservation. Incentives such as prices, regulations, taxes, subsidies, and/or social norms influence how individuals and organizations interact with the environment. For example, higher charges for carbon emissions can incentivize industries to invest in cleaner energy sources. Subsidies for renewable energy can prompt individuals to adopt these technologies.

Whenever you come across an example of cost–benefit analysis in the textbook, try to apply critical thinking to analyse the scenario and consider multiple viewpoints.

■ Market failure and its implications

Market failure occurs when the market is unable to allocate resources efficiently. This causes society to pay the price for improper allocation. Market failure can present itself in terms of



negative externalities (costs imposed on people as an indirect effect of the actions of some other people), and imperfect competition and provision of public goods, among others. For instance, if a factory is polluting the atmosphere with its emissions, the people living near the factory have to pay a cost in terms of the health problems they suffer as a result of the pollution.

Excessive market power displayed by monopolistic markets can lead to market failure by imposing market dominance and not allowing other competitors to sell their products. Public goods are meant for all citizens and no one ought to be excluded from enjoying them. Since private companies cannot draw profits by making these goods available, they are generally neglected without proper government intervention.

■ Greenwashing

Greenwashing or green sheen refers to the practice of portraying a product, a company, a policy, an activity, an individual, or a group as being environmentally friendly or sustainable, usually with the intention of attaining popularity or financial gains. Companies may not actually implement sustainable practices but may hide behind greenwashing propaganda to maintain their market presence.



In the global food industry some companies market their products as environmentally friendly or ethically sourced while contributing to deforestation, biodiversity loss, and exploitation of labour in various parts of the world. Often, it is people in poorer countries who have to pay a greater price for the greenwashing tactics of big companies. For example, companies that are responsible for clearing large portions of the Amazon rainforest for agricultural purposes (e.g. to produce products such as refined oil or animal feed) often portray themselves as being grounded in sustainable practices. Some companies, for instance, were involved in the destruction of large areas of the Amazon to build a port in Pará, Brazil in 2003 to facilitate transporting exports, while simultaneously promoting themselves as environmentally friendly. This destruction also exposed areas of the forest for soy production.

REAL-WORLD EXAMPLE

Dieseldgate

In 2015 a notice was issued to Volkswagen Group by the US Environmental Protection Agency for violating the Clean Air Act. The automobile company admitted to having intentionally programmed a 'defeat device' to turn on its emissions controls only under laboratory-testing conditions, thus making it look like its NOx emissions matched the US standards. In reality, the engines were emitting up to 40 times more NOx.

Volkswagen had marketed its 'clean diesel' engines as environmentally friendly, and as providing high fuel efficiency with minimal emissions. The company's advertising campaigns emphasized the environmental benefits of diesel technology, positioning VW as a leader in sustainable transportation. However, the revelation of the emissions undermined the company's claims of being environmentally friendly. The company suffered significant financial and reputational damage. Settlements required the company to spend up to \$10 billion to buy back vehicles, make alterations in the engines, and pay compensation to the consumers. The company was also required to spend almost \$4.7 billion to mitigate pollution and invest in zero-emission vehicle technology.

(Source: <https://19january2021snapshot.epa.gov/vw/frequent-questions-about-volkswagen-violations.html>)



To what extent do pre-existing beliefs and values influence individuals' acceptance or rejection of information within environmental messaging?

HL.b.6–HL.b.8 Challenges in environmental resource management

Efficient resource management is a challenge for policymakers and stakeholders. Climate change, increasing population, increasing food demands, and deforestation are some of the major challenges, and these are worsening as time goes on. The tragedy of the commons points towards the detrimental consequences of unregulated use or access to a common resource. When property rights are not clearly indicated, individuals lack incentives to conserve shared resources, leading to overexploitation and depletion. For instance, the overfishing that occurs in open-access fisheries, where fishermen exhaust fish stocks due to the absence of clear ownership and accountability (see Topics 4.3.5 (page 340) and 4.3.14 (page 363, HL only)).

Concept

Sustainability

The problem of the tragedy of the commons arises due to individuals acting out of selfish interest, and the effects of this on the larger community. Unsustainable exploitation of resources can lead to environmental degradation, depletion of natural resources, and ultimately the collapse of the resource system. By failing to manage common resources sustainably, societies risk undermining their own well-being and future prosperity.

Link

More information about the impacts of the tragedy of the commons on biodiversity is available in Topic 3.2.7 (page 231). See Topic 6.3.14 (page 588, HL only) for the effects of the tragedy of the commons in relation to climate change.

■ Environmental accounting

Natural resources possess some value; this can be either ‘use’ or ‘non-use’ value. Environmental accounting, also called green accounting, is a tool that helps companies and organizations evaluate the environmental impacts of their actions and the cost of these impacts. The main aim of this concept is to make companies responsible for their actions. Putting a value on natural resources helps policymakers design policies that ensure the long-term viability of these natural resources and services. Non-use values include value in the coming time (option value), value for existence (existence value), and use for future generations (bequest value). Non-use resources also need to be accounted for so that all living organisms can benefit from them today and in the future.

Link

Environmental accounting is covered in detail in Topic 7.1.7 (page 615).



ATL ACTIVITY

Extension of ATL Activity on page 592:

- Divide into groups of three or four students, or work independently.
- Based on the tragedy of the commons activity on page 592, plan a conservation drive to spur awareness about any common resource, such as water, soil, forests.
- Design posters or banners with slogans to display during the conservation drive.
- Spread awareness about conservation during assembly or any other meeting in your school.

HL.b.9–HL.b.16 Ecological perspectives on economic growth

Concept

Systems and models

Ecological economics perceives that our actions as we use natural resources are a small part of the larger system called the biosphere. When we make and use things in the economy, we take resources from the biosphere and produce waste, which can harm the environment. Only as much of the resource should be extracted as is required, without damaging the environment. The overall energy of the biosphere is balanced because the high-grade thermal energy received from the sun is converted into low-grade wastes after it has passed through a variety of living systems. A holistic approach allows us to see the interconnectedness of human activities and ecological systems.

Humans benefit from ecological services obtained from the environment. Valuation of these services can help ensure that they are maintained sustainably for longer periods of time. Some countries used up their natural assets such as forests for timber and other resources to achieve economic growth in the past. These countries may realize the importance of forests in regulating the climate and be willing to pay another developing country, which still has its untouched reserves of forests, to not indulge in overexploiting them for the sake of economic growth. This payment is a compensation to the developing country to maintain its natural assets. However, sometimes this arrangement may not be interpreted as intended as the developing country may feel that it is being paid to obstruct its economic growth and thus may not be willing to participate in the agreement.

Ecological economics highlights the negative impacts of economic growth on environmental well-being. Sustainability can be achieved only if environmental degradation is decoupled from economic growth. Imagine a factory that had manufactured cars and emitted huge amounts of greenhouse gas in the past. The same factory has now adopted cleaner energy sources and is producing automobiles with less pollution. This is eco-economic decoupling. However, experts feel that it is very unlikely to be possible to achieve complete eco-economic decoupling. This is because, to achieve economic growth, more raw materials generally need to be extracted from the environment. If the rate of extraction goes beyond what is sustainable, then even though the pollution will be less (relative decoupling), there will be harm due to the overexploitation.

Economic development is usually measured in GDP, which focuses on economic growth. Decoupling or alternatives such as zero growth, slow growth or degrowth shift the focus on to social and economic measurements such as education, housing, ecological and human well-being, instead of perpetual growth. An example of this is GNH (gross national happiness), as used in Bhutan (see Topic 1.3.5, page 56). This carries its own challenges as there is no direct way to measure social and environmental well-being. We have already crossed six out of the nine planetary boundaries, which means that many countries are living in ecological deficit (see Topic 1.3.19, page 72). Planned reduction in consumption and production, particularly in high-income countries, can support ecological sustainability and social equity.

Link

More information about how the circular economy promotes decoupling of economic activity from consumption of finite resources is available in Topic 1.3.21 (page 77). See Topic 6.3.2 (page 566) for decarbonization of the economy.

Link

More information about economic sustainability is available in Topic 1.3.5 (page 55).

HL.b.17 Sustainable economic models and strategies

The circular economy model and the Doughnut of social and planetary boundaries demonstrate sustainable economic approaches rooted in ecological principles. The effectiveness of these models in addressing the sustainable activities of a society varies. The circular economy model aims at waste reduction stewardship shared by the manufacturer, seller and user by extending the product lifecycle. The doughnut economic model aims to balance human needs within the limits of the planet's ecological boundaries. Successful implementation of the doughnut model will ensure equity in resource allocation and reduce inequality and injustice.

Link

More information about the circular economy model and the Doughnut of social and planetary boundaries is available in Topics 1.3.20 (page 75), 8.1.9 (page 711, HL only) and 8.2.12 (page 734, HL only).

Guiding questions

- To what extent do humans have a moral responsibility towards the environment?
- How does environmental ethics influence approaches to achieving a sustainable future?

HL.c.1–HL.c.3 The development of environmental ethics

Ethics are a set of morals and an understanding of what is right and what is wrong. Ethics are shaped by similar factors to those that shape our environmental value system. Influences such as religion, education, location, and quality of living can all affect a person's morals and ethical viewpoints.

Throughout the text of this book there are many examples of how environmental ethics and values can and have influenced decisions and actions. In your daily life you will need to navigate many ethical and moral issues, such as making decisions on what action to take in a situation. Examples could include considering switching to a plant-based diet (see Topic 5.2.11, page 481), and the choices we make daily regarding personal resource use (see Topic 7.2.3, page 637).

Concept

Perspectives

Ethical issues are highly complex due to the fact that a person's fundamental ideals are often challenged by the context the issue is placed in. For instance, your context – if you are from an affluent gated community, you will have a very different life perspective from someone who lives in a rural community in the foothills of the Himalayas. The context of the situation is also extremely important. These factors may result in different outcomes for similar issues in different places. When considering environmental issues, try to consider the context of the issue and the varieties of norms around the world.



The birth of environmental ethics can be traced to the 1960s. Rachel Carson's book *Silent Spring* (see Topic 1.1.10, page 20) represents a significant point, where people began to develop an understanding of the impacts of some of our behaviours on the environment. This led to the development of Earth Day in the early 1970s, which spread the message about protecting the environment to millions. This decade also saw the development of national environmental policies in some countries, including the Clean Air Act and the Clean Water Act in the USA (see Topic 4.4.17 (page 410, HL only)). In response to widening awareness of environmental issues, ecological studies and ecology-focused research began to develop a deeper understanding of the complex feedback systems and interactions that are part of ecological systems.

As a response to the developments during this period, distinct environmental ethical frameworks were developed around elements of ethical theories that were already well established. These frameworks brought the focus towards the impacts of human actions on the environment, and brought elements of philosophy, science, and cultural perspectives to complex environmental issues.

The diversity of ethical frameworks and conflicting values regarding the relationship between humans and nature reflects the complexity of environmental ethics. Different fundamental beliefs, philosophical traditions, and cultural perspectives all contribute to this diversity. Beliefs about the value of humans over the value of nature are strongly linked to what humans can get from the natural environment and have a strong anthropogenic focus (see Theme 1). By contrast, ecocentric focuses originate from a belief that humans are a part of nature and their role is to protect the intrinsic value of the natural environment.



HL.c.4–HL.c.7 Instrumental and intrinsic value

The value of the natural environment can be viewed in two main ways: in terms of its instrumental value to humans as goods or services (natural capital), and in terms of its intrinsic value in its own right. These opposing views of the environment and humans' role within the system can result in greatly differing ways of managing environmental issues.

■ **Table 9.1** The instrumental value and intrinsic value of the natural environment

Instrumental value	Intrinsic value
<p>Belief in the instrumental value of the natural environment means a belief that organisms are valuable because from them humans can obtain:</p> <ul style="list-style-type: none"> • goods, e.g. wood from forests for construction • services, e.g. a habitat for many species of birds • opportunities for human development, e.g. knowledge derived from medicinal plants found in a forest. 	<p>Belief in the intrinsic value of the natural environment means a belief that wild organisms have value in just being a wild organism, e.g. a tiger.</p> <p>Cultural importance and beauty provide value for a habitat or inanimate object, e.g. limestone crags.</p> <p>All living organisms have value due to their ability to reproduce, consume other organisms, develop and grow.</p>

Many organisms have a wide variety of instrumental and intrinsic values that are seen very differently by different groups of people. An example of this could be the whale; for the Inuit people a whale represents an abundance of valuable resources for use within their daily lives, whereas for non-indigenous tourists from urban North America or Europe a whale represents a rare sighting of a vast and unusual animal. Whales therefore have both intrinsic and instrumental value.

In order to provide a framework for quantifying the impact of intrinsic value on natural resources it is important to understand that, from an ecocentric point of view, if something has intrinsic value it also has moral standing and therefore is offered the same rights as humans. This idea was developed by Aldo Leopold in his 1949 book *A Sand County Almanac*, who stated, 'a thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends otherwise.' This is further extended to non-living parts of an ecosystem due to their place in helping to preserve a balance in the ecosystem. For example, a rock can provide shelter from heat or rain, or a habitat in the cracks in the rocks. Therefore, non-living elements are a key part of the functioning and balance of that ecosystem (see Topic 7.1.7, page 615).

TOK

Do the benefits of current improvements in development, technology, and standards of living outweigh the impacts of these developments on future generations?





ATL ACTIVITY

In groups, turn to page 614 and focus on the diagram of the coral reef system. Read the information in the diagram, divide the group into four, and each investigate one of the services: medicine, coastal protection, tourism and recreation, or food and fishing.

- Identify the instrumental and intrinsic values of each area.
- Consider the ethics relating to each area, including a focus on what or who benefits from these activities, and what or who is negatively impacted by them.

Come back together as a group and discuss the issues relating to the successful management of coral reefs to ensure all stakeholders are satisfied and the marine environment is sufficiently protected.

HL.c.8–HL.c.12 Approaches to ethics

There are three major areas of traditional ethics that can be related to environmental issues. These differ according to the characteristics of a person's values and the consequences of actions.



Concept

Perspectives

Ethical norms are developed throughout your lifetime and are influenced by similar factors as those that impact your environmental value system. Your upbringing, even on a basic level, such as whether it was in an urban or a rural community, will influence your views on some elements of what is right or wrong. For example, some rural communities raise livestock to later slaughter and eat. This may be seen as wrong by people from outside that community. If a person is brought up seeing meat as it is bought in the supermarket to cook and eat, the idea of killing an animal for a meal may be beyond what they view as normal.

■ **Table 9.2** Relating traditional ethics to environmental issues

	Virtue ethics	Consequentialist ethics	Rights-based ethics
Main idea	Good people do good things, and bad people do bad things.	Actions with good consequences are good, and actions with bad consequences are bad.	Actions that conflict with the rights of others are wrong.
Focus	The person doing the action.	The action that is being performed.	The impact of the action on another.
Detail	A person with virtuous properties such as empathy and compassion will be considered a good person. Therefore, their actions are deemed to be good.	An action that results in a greater good is considered moral, even if the intention of the action is not morally correct.	The act of killing an animal for food for humans is not morally correct as it goes against the rights of that animal. Some religions believe in the intrinsic right of all living things, as do those with a deep ecologist mindset.
More detail	It develops sustainable resource use, equitable distribution of benefits, and long-term environmental stewardship. It guides decision making to ensure that actions contribute to the well-being of current and future generations.	It justifies environmental conservation based on human well-being, health, and economic interests. Policies and decisions prioritize the protection of the environment to ensure the continued flourishing of human societies. This fits with an anthropocentric viewpoint.	It encourages the development of virtues such as ecological wisdom, humility, and responsibility. It promotes a sense of environmental stewardship and emphasizes the importance of personal virtues when addressing environmental challenges.

	Virtue ethics	Consequentialist ethics	Rights-based ethics
Syllabus links	Topics 3.2.7 and 4.3.4 (pages 231 and 337): The tragedy of the commons results from the fact that people do not all have the same morals.	<p>Topic 3.2.11 (page 238, HL only): As economic development will improve standards of living, should indigenous communities be forced to abandon traditions that are not seen as sustainable?</p> <p>Topic 4.1.5 (page 275): Extraction of water for irrigation has led to a huge reduction in the size and productivity of the Aral Sea, Central Asia.</p> <p>Topic 4.2.4 (page 299): Three Gorges Dam, China. Displacement of human and animal populations, flooding areas to create a dam to provide renewable energy for the large population in the area.</p> <p>Topic 5.2.7 (page 471): The Green Revolution and the impact on the quality of soil and the environment.</p> <p>Topic 7.2.9 (page 660, HL only): The impact of uranium mining on the Navajo communities.</p> <p>Topic 7.3.4 (page 672): Palau Indah, Malaysia. Air pollution created from the recycling of much of the plastic waste from around the world.</p> <p>Topic 8.1.5 (page 702): Reducing population explosion is an important global goal; does that make anti-natal policies ethically correct?</p> <p>Topic 8.2.11 (page 732, HL only): Should urban expansion and development be allowed due to the fact that the impacts on the environment are clearly known?</p>	<p>Topic 3.2.12 (page 241, HL only): Some communities around the world view some animals as suitable for consumption, while others see this as unethical.</p> <p>Topic 4.2.19 (page 328, HL only): Lilongwe, Malawi. Priority access to clean water was given to the more affluent parts of the city as it developed. This can also be viewed as consequentialism.</p> <p>Topic 4.3.16 (page 369, HL only): Bans on harvesting marine mammals and the rights of indigenous communities. This explores the complex rights-based issues relating to both parties.</p> <p>Topic 8.1.12 (page 716, HL only): Many people are being forced to migrate due to climate change, therefore the use and burning of fossil fuels may be seen as ethically wrong.</p>

In addition to these sets of environmental ethics, there is also the belief that everything that is natural is good (see Theme 5). Many factors suggest this is not the case, however, such as events like natural disasters, the effects of vector-borne diseases (e.g. malaria and dengue fever) on human health, and the fact that oil, a natural resource, is a significant pollutant to the aquatic environment when released into water (see Topic 4.4.1, page 380), and releases considerable pollution into the atmosphere when burned (see Chapters 6.1, 6.2 and 8.3, pages 514, 528 and 740). This is often termed the ‘appeal to nature’ fallacy.

Concept



Systems and models

As with most aspects of the natural environment, actions in one area have rippling impacts throughout other parts of the environment. These impacts may be far reaching and can impact those who have not been responsible for producing the pollution (see Chapters 6.2 and 6.4, pages 528 and 594). Environmental ethics must consider this to ensure that social justice is not unknowingly reduced.



HL.c.13 Environmental and social justice movements

The environmental movement and the social justice movement have developed similar goals of reducing inequalities, protecting vulnerabilities, and restoring balance, despite having significantly differing histories. The development of the environmental movement began long ago (see Topic 1.1.10, page 19). The development of the social justice movement also began long ago, and can be traced back to the abolition of slavery in the nineteenth century, the anti-apartheid movement in South Africa in the mid-nineteenth century, the civil rights movement in the United States, and the development of the feminist and LGBTQ+ movements in parts of the world.

Concept

Perspectives

As well as notable global and famous elements of the development of both the social justice and environmental movements, there are multiple local issues that have also directed these in different parts of the world. For example, some countries still have not developed women's or LGBTQ+ rights, and others such as Saudi Arabia and Iran have underdeveloped implementation of environmental policies. Conversely, there are also countries, such as Finland, Sweden and Norway, that are known for their highly developed environmental and social justice standards and often lead the way in social change. The history and religious, political and social aspects of each country will result in differing perspectives and actions on some common issues.

The parallels between the apparent superiority of humans over nature and other forms of exploitation, such as sexism, racism and equity issues, are a notable aspect of environmental ethics. This comparison often draws attention to the ethical implications of hierarchies, discrimination, and the unequal distribution of rights and resources.

There are also many areas where the environmental and social justice movements are not aligned. These include:

- the rights of indigenous communities, which are often considered to conflict with the development of conservation strategies – see Topic 4.3.16 (page 369, HL only)
- the extraction of resources – see Chapters 7.1 and 7.2 (pages 608 and 634)
- the provision of food – see Chapters 4.3 and 5.2 (pages 331 and 456)
- the assimilation of waste from energy production, manufacturing and agriculture – see Chapters 4.4, 5.2, 6.3 and 7.3 (pages 372, 456, 562 and 666).

REAL-WORLD EXAMPLE

Belo Monte Dam, Brazil

With a growing human population and the need to harness more renewable energy sources, Brazil has created its largest hydroelectric dam in the Amazon forest. The Belo Monte megadam transects the Xingu River and its construction has resulted in the displacement of thousands of indigenous people, destroying homes, land and livelihoods. This project was considered to be of greater import than protecting minority rights and land. This shows a disregard for the importance of these communities over the greater good for the people of Brazil. This project has not been as successful as was hoped, with the volume of water movement and therefore production of electricity dropping due to climate change.



Concept

Sustainability

In order to develop sustainability, a balance needs to be found between environmental and social justice, where the protection of vulnerable communities and the protection of vulnerable habitats are given equal importance.



ATL ACTIVITY

Individually select a major pollution event or environmental disaster (some are suggested below) to fully assess and present to the class. Possible events/disasters include:

- Minamata
- DDT
- Fukushima
- Chernobyl
- Deepwater Horizon.

Consider the event from the viewpoints of the three major ethical frameworks: virtue ethics, consequentialist ethics, and right-based ethics.

Consider the legal and economic causes and impacts of the event.

Use information in the textbook as well as online information to consider all aspects. If there is a major pollution event that has occurred near your school then this could be researched alongside these events of major international importance, to provide a local perspective.



ATL ACTIVITY

Extension of ATL Activity on page 686:

- Track your waste production for seven days to get a good representation of your activities. Write down how often you used disposable cups, cutlery, plates, napkins, etc., and how many food wrappers and plastic products your food for the week came in.
- Analyse your waste, and where you created the most. Devise strategies to avoid this, e.g. using a reusable water bottle.
- Spend the following week trying to be as waste-free as you can. Note down all of the waste you produce and any changes in your behaviour during this time.
- At the end of the second week, compare you two weeks of waste production. Were your changes effective, and how easy were they to make and maintain? Select *at least* one of these changes to maintain.
- As a class, write an article for the school website or magazine to highlight the importance of each individual's personal waste-management behaviour.