# 9 Environmental Issues

*Gerald Herbert/Associated Press*

## Learning Objectives

After reading this chapter, you should be able to:

- Describe different ethical perspectives concerning environmental issues.
- Describe the ethical issues surrounding corporate pollution.
- Describe the environmentalist critique of corporations engaging in habitat destruction.
- Summarize ethical concerns related to resource depletion.
- Describe the ethical issues related to global warming/climate change.
- Explain the conflict between environmental values and commercial freedom and the various ways governments and businesses try to resolve that conflict.

## Chapter Outline



# Introduction

In 2010, the Deepwater Horizon oil platform off the coast of Louisiana exploded, killing 11 people, unleashing 200 million gallons of oil into the sea, and affecting over 300 miles of Louisiana coastline and its wildlife habitats. BP, which owned the rig, agreed to pay $42 billion in cleanup, fines, and compensation. And in 2011, the Fukushima nuclear reactors went into meltdown in the hours following a tsunami that hit the Japanese coastline. Although no one was directly killed from the radiation, 300,000 people from the area were evacuated, and 1,600 died as a result of the relocation. The reactors bled radioactive waste into the seas and air, and some of the radioactive substances have been detected as far as the west coast of the United States.

These are dramatic examples of environmental disasters that receive much publicity. Less publicized are situations in which the environmental effects of our actions are not visible and

may be hundreds or even thousands of miles away. Consider taking a shower and using regular soap. Many personal products have a range of chemicals in them that are washed down the drains, into the sewers, and out into the rivers to the sea. Along the way, some of these have cumulative effects on plants and animals and on the quality of water. Consumers do not usually think about the impact their shampoo may be having on aquatic animals living several hundred miles away, and following self-interested behavior, they have no incentive to change.

Whether the environmental damage is obvious or hidden, environmental responsibility is now a central concern for businesses. Indeed, perhaps the greatest challenge that humanity faces today is how we should interact with the environment. Figure 9.1 lists 15 environmental issues that are frequently discussed in the news and are of widespread concern, according to national surveys. In this chapter, we will examine just some of the key environmental problems that affect businesses: pollution, habitat destruction, resource depletion and sustainability, and global warming.

Over the last several decades, industries have made dramatic environmental improvements. Air pollution has been cut by at least one half. The timber industry now focuses on replanting to help assure the availability of future supplies. Business Ethics Case Study 9.1 at the end of this chapter discusses the environmental improvements that the carpet company Interface has made. In spite of such great strides, the challenges of maintaining the environment are great and ever increasing. Population will grow by 2 billion people by 2050; as people in developing and emerging countries acquire more money, they will want more consumer goods. These two factors alone will put pressure on businesses to work even harder to protect the environment. We will begin with a look at the main concerns of environmentalism.

## Figure 9.1: Common environmental concerns

**Both large- and small-scale impacts are elements of environmental responsibility that businesses today should address.**

Biodiversity decrease
Consumer product overuse
Deforestation
Energy unsustainability
Fresh water decrease
Global Warming
Land overuse and degradation
Nitrogen fertilizer overuse
Ocean acidity increase
Ocean system collapse
Over-fishing
Overpopulation
Ozone layer depletion
Pollution of air, water and soil
Toxic Waste disposal

*Note: Items listed alphabetically.*

# 9.1 Environmentalism

Campaigners across the environmentalist spectrum have raised important points that are having an increasing impact on how we live and do business at home and around the world. In this section, we will look at their major concerns and the criticisms they have encountered in describing our relationships with nature and with economic growth and our impact on the planet.

## Economic Growth and Environmental Damage

In considering the environment, we need to think about our relationship with economic growth. Growth can bring prosperity, but it can also create environmental problems.

The technological advances that have accumulated following the industrial revolution have enabled us to increase our population and produce more energy and products than ever before. In the aftermath of World War II, there was a rush to employ the enormous breadth of technology that had been advanced by science. Chemical companies proliferated, and governments invested in nuclear power. Big projects such as dams, extended harbors, airports, and highway systems were seen as symbols of postwar prosperity and as necessary for economic growth. Indeed, economic growth became the guiding principle that governments primarily focused on. Growth, it was argued, would enrich the world's poor and lift millions out of poverty.

However, in the rush to economic growth, several key factors were overlooked or ignored, the most prominent one being the effect on the world's habitats and environments. As resources were depleted, indigenous peoples were displaced and lost their homes and natural habitats. Chemicals used in production were wantonly discarded into the air or into rivers, lakes, and seas, leading to negative local and global effects. Swaths of forests were cut down, destroying animals'habitats and landing many species on endangered lists. Fossil fuels contributed to global warming, and pharmaceutical pollution of the waters was evident in the dispersal of medicines in a variety of flora and fauna. Air pollution caused an estimated 200,000 deaths annually in the United States (VOA News, 2013).

*Chuck Keeler/The Image Bank/Getty Images*

**In this photo, a crop sprayer is spraying a pesticide, which can have secondary effects on the land and other animals and flora. Critics are concerned that such spraying is reducing the honeybee population and building up toxins in the water supplies.**

Consider the farming industry. As do any business owners, farmers want to increase their yields and profits; along came agrochemical companies, offering them efficient means to rid their crops of pests and diseases. The results were immediate and visible: Yields rose as farmers sprayed the land and crops in their war on the environmental threats to their livelihood.

However, scientists now know that fertilizers and other agrochemicals sprayed onto agricultural land seep into the waterways, causing oxygen

starvation for fish and other animals. The application of chemicals began to take its toll on other species but also on humanity, as health effects from the chemicals were noted. Ethical questions began to arise about the priorities of corporations, governments, and end users alike.

## Varieties of Environmentalist Positions

Against the backdrop of environmental damage caused by businesses, the environmental movement emerged. **Environmentalism** is a social and political movement that works toward protecting the natural environment from destruction or pollution. Early influences on environmentalism were the 19th-century writers Ralph Waldo Emerson, Henry David Thoreau, and John Muir, who emphasized the importance of returning to nature and preserving wilderness areas. The movement took its modern form in the 1970s, inspired in part by several books whose titles are telling: Rachel Carson's *Silent Spring* (1962); Paul R. Ehrlich's *The Population Bomb* (1968); Donnella Meadows' *The Limits to Growth* (1972); and E. F. Schumacher's *Small Is Beautiful* (1973). All of these books are still in print and have had an enormous impact on reading generations since. Indeed, Carson's work led to the banning of the pesticide DDT and to the creation of the Environmental Protection Agency (EPA). Organizations defending the environment have also proliferated, including the Sierra Club, Greenpeace, Earth First!, and the Earth Liberation Front, with some of these being more radical than others.

The main ethical position of the environmental movement can be encapsulated in the following points:

- Current economic growth is not environmentally sustainable, and we are undermining our own habitat and health.
- Resources are being depleted at worrying rates and population growth is out of control.
- People and companies are arrogant in assuming that we cantame nature for our purposes and for our own short-term gains.
- We have responsibilities toward other species and must acknowledge that some animals might possess rights similar to those of humans.
- The Earth and its vast range of habitats and living creatures deserve respect and protection from humanity's greed for resources.

Virtually everyone acknowledges that people have at least some moral responsibility to protect the environment. What is up for debate, however, is the extent of that responsibility and how much personal sacrifice we should make on behalf of environmental protection. There are two primary theories about the source and scope of our environmental responsibilities.

- **Environmental anthropocentrism** is the view that our sole moral responsibility is to human beings, and all obligations that we owe to the environment are only indirect, based entirely on how treatment of the environment impacts humans. For example, polluting a river is wrong only because it would be harmful to human health and ruin the economic or recreational use that we might get from the river.
- **Biocentrism** is the view that we have a direct responsibility to the environment itself for its own sake, not merely because of the impact that treatment of the environment has on humans. Polluting a river, for example, is wrong because it is directly harmful to the environment itself.

Environmental anthropocentrism is a bare minimum moral conviction that draws on the obvious point that human life is affected by its environment. Biocentrism, however, goes beyond this and maintains that not all value rests on human interests. The environment itself deserves moral consideration, because of the special value individual organisms have, especially higher animals, and because of unique components of the environment, such as species, habitats, and complex ecosystems.

Often, these two approaches to environmental responsibility line up with each other: Dumping toxic waste into a river is both harmful to humans and also damaging to unique components of the environment. A business example of this compatibility between anthropocentrism and biocentrism is a $1.1 million investment by the Dr. Pepper Snapple Group to protect a 6 million acre nature conservancy, which will improve water supply and quality in five Texas watersheds. A spokesperson for the conservancy said, "If there's not fresh water, there's no business—it's just that simple" (Plushnick-Masti, 2012).

Other times, however, the two approaches do not lead to the same result. A case in point is the controversy surrounding the Arctic National Wildlife Refuge, a 30,000 square mile region of northern Alaska owned by the U.S. government. The area is so remote and inhospitable that there are no roads leading into it and it has no tourism value. Oil companies are interested in accessing the oil reserves within the refuge, but doing so would have a damaging effect on the environment, which, among other features, contains a calving ground for the porcupine caribou. Anthropocentrists argue that the human benefits of drilling outweigh the liabilities to humans, so the government should permit drilling. Biocentrists, on the other hand, argue that the liabilities to the environment of drilling outweigh the human benefits, so the government should ban drilling.

### What Would You Do?

Consider the facts of the Arctic Refuge drilling controversy described above.

1. If you were the CEO of an oil company, would you lobby the government for access to the Refuge, in spite of the public controversy surrounding it? Why or why not?
2. Suppose that you were the U.S. president running for re-election. Oil lobbyists want you to give them access to the Refuge, but environmental lobbyists don't, and no matter which side you pick, you risk alienating a large group of voters. Which side would you go with and why?
3. Suppose that you are an ordinary citizen and the president just granted oil companies access to the Refuge. Would this affect your decision about whether to re-elect the president? Why or why not?

## Free Market Response to Environmentalism

In reaction to environmentalists, free market economists argue that environmentalism attacks our fundamental right to live and pursue happiness. "The environmentalists," George Reisman wrote, "view man as evil, because, in the pursuit of his well-being, man systematically destroys the wildlife, jungles, and rock formations that the environmentalists hold to be intrinsically valuable" (Reisman, 1990, p. 82). Reisman thinks that environmentalist

proposals are contrary to human needs and desires. In turn, capitalist enterprises should involve no restrictions except those created by private property arrangements.

Indeed, some of the environmental laws can cause unintended negative effects and confusion. For instance, in 1993, homeowners in Riverside, California, were told not to clear-cut the overgrown brush around their homes in order to protect the kangaroo rats living there. However, when a wildfire broke out, that brush burned swiftly; the fire destroyed many homes as well as the rats (Burgess, 2003, p. 64). In 2011, oil companies were fined $6.8 million for not mixing a certain biofuel into their gasoline and diesel fuels, but the required compound did not even exist (Wald, 2012). For some critics, it is individuals and small businesses who bear the brunt of a growing environmentalist crusade against common sense and fair practice (Wollstein, 1999).

In the next sections, we will look at specific issues of environmental concern and how environmentalists and businesses respond to them. We begin with a look at pollution.

## 9.2 Pollution

In 1979, a nuclear power plant on Three Mile Island in Pennsylvania had a partial meltdown of its reactor core, causing the release of 13 million curies of radioactive gases into the neighborhood. In 1989, the Exxon Valdez struck a reef and released over 10 million gallons of crude oil into Prince William Sound. In 2003, the Missouri-based multinational company Monsanto was fined $700 billion for dumping millions of pounds of polychlorinated biphenyl (PCBs) into open-pit landfills. In 2008, 80 acres of coal slurry containing a billion gallons of toxic sludge broke through a containing wall owned by the Tennessee Valley Authority in Roane County, Tennessee, onto 300 acres of land, destroying homes and contaminating the area with arsenic, mercury, and lead.

*Wade Payne/Associated Press*

**This photo shows a home that was destroyed by coal slurry containing toxic sludge that broke through a containing wall owned by the Tennessee Valley Authority in Roane County, Tennessee. The clean-up cost was estimated at $1 billion and will take at least six years.**

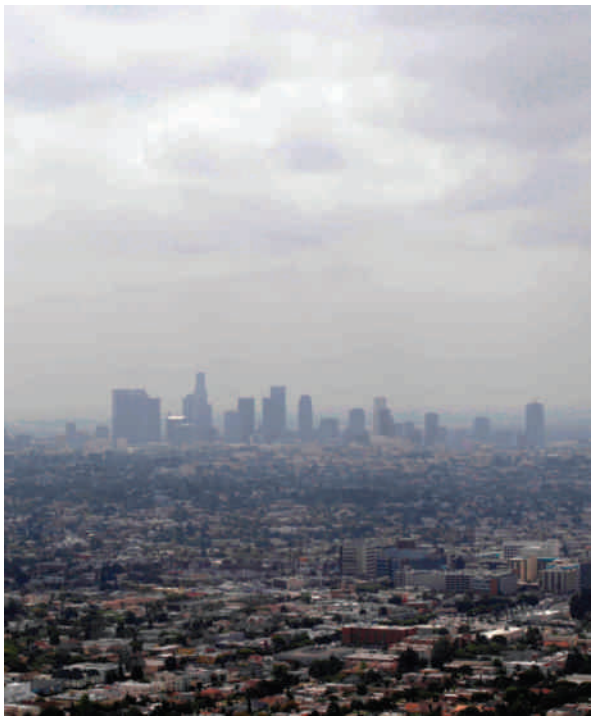
Further, according to environmental campaigners, 40% of the United States' rivers and 46% of its lakes are too polluted for swimming. The Mississippi River drains 1.5 million tons of nitrogen products into the Gulf of Mexico, creating a "dead zone" the size of New Jersey each summer. Annually, a quarter of American beaches are closed because of water pollution. Factories emit 3 million tons of toxic chemicals into the environment.

Each American produces over 3,200 pounds of hazardous waste annually. Together, the American population produces 10 times more toxic chemicals than the agricultural industry and uses 30 billion foam cups and 1.8 billion disposable diapers each year, which can take 500 years to decompose in landfills. Some 80% of American streams are polluted from pharmaceutical products, which in turn contaminate drinking water ("11 Facts About Pollution," n.d.; "Our Pollution," n.d.; U.S. Geological Survey, 2002). The North Pacific Ocean is home to the Great Pacific Garbage Patch, which is an area about the size of the continental United States where plastic particles, chemical sludge, and other garbage have become trapped by ocean currents. According to the U.S. Environmental Protection Agency, the main source of the garbage is improper waste disposal.

When we talk of pollution, the statistics are grim. Of course, nobody is *for* pollution: the problem is how pollution should be dealt with. For some, the solution lies with the free market and the proper recognition and defense of property rights. For others, the solution lies with governments and regulations.

## Emissions Trading

One scheme that has proved popular with governments and companies is the creation of a market in **emissions rights**, which seeks to embrace both market and regulatory solutions. A government body sets a national limit on a certain emission and then shares out the rights to emit that pollution across various companies. Those rights to pollute may then be traded, with companies selling rights to pollute to those who pollute more and need the extra licenses. The tradable licenses cover a variety of emissions and pollutants and are generally called **cap-and-trade** rights.



*Nick Ut/Associated Press*

**Because of the smog that affects many of its cities, California has sought to impose strict regulations on pollution output.**

### *Emissions Regulations*

The Clean Air Act Amendments of 1990 capped emissions of sulfur dioxide, which is an air pollutant from combustible fuel such as from automobiles, and reduced overall output by 50% between 1980 and 2007. The Cross-State Air Pollution Rule, enacted by the EPA in 2011, was a further move to reduce interstate pollution and health effects on Americans by targeting power plant emissions and other fine particle emissions (U.S. Environmental Protection Agency, n.d.). While there is no national law, individual states have created programs to cap and trade emissions in a variety of pollutants.

Internationally, governments have set up trading schemes in carbon pollution, permitting countries to purchase the right

to pollute the world from others who do not produce as much pollution. The scheme was designed to ensure a more level playing field between nation-states but also to encourage nations to begin reducing global carbon emissions as a whole. London, England, has become the prominent trading market for carbon emissions.

### *Problems With Emissions Trading*

Emissions trading has its critics. Cap-and-trade programs still permit the Earth to be polluted and hence let corporations avoid responsibility: They can continue to harm the planet and its people by buying the right to do so, which critics see as unethical. Arguing from an absolutist position, critics claim that all pollution is an act of aggression against innocent people and that there should be zero toleration. People's health and the quality of the environment are more important than company profits.

Some have argued for a **carbon tax** as a simpler and more direct method; others argue for a complete ban on hazardous industrial byproducts. A carbon tax would be a simple tax on all carbon-based gas emissions, such as on carbon monoxide and carbon dioxide from cars and factories. (California, Maryland, and Colorado have implemented carbon taxes.)

For free market economists, the issue is whether there is indeed a provable case against polluters. If a plaintiff can substantiate that a corporation or individual does in effect cause harm, then that corporation or individual can be rightly sued, but there must be evidence of a crime taking place (Rothbard, 1982). So for the free market thinker, the problem lies in seeing the evidence of harm done. If there is no objective evidence of harm being caused, companies can continue to release their pollutants. If there is evidence, the companies should rightly be sued.

However, environmentalists reject this theory, because they believe that the evidence is accumulating slowly and from so many different angles that it is difficult to pinpoint a certain company that is causing this pollution. Consider the death of a person who smoked, drank copious alcohol, ate unhealthy foods, never exercised or got out in the fresh air, was clinically depressed, and eventually died relatively young: What was the cause of death? A coroner may justly reply, "All of the above."

Thus, trading in the right to pollute causes controversy. Environmentalists point out that it removes responsibility for halting pollution, and even free market economists would admit that companies are being given a right to pollute when they are causing great harms.

## 9.3 Habitat Destruction

Corporations are often guilty of massive habitat destruction. The lists are commonly catalogued in environmentalist publications, but even prominent business magazines list the ever-expanding disasters:

- Three quarters of the world's genetic material in plants may have been lost, and water tables are plummeting ("No Easy Fix," 2011).

- The world's coastlines are suffering from an increase in slime due to over fishing and habitat destruction ("The Rise of Slime," 2009).
- Some 20,000 species may be lost each year (Bird, 2011).
- In the last four decades, over 232,000 square miles of the Amazon rain forest was cut down (Haluzan, 2010).

## The Environmentalist Critique

The destruction of the rain forests and the "dead zone" in the Gulf of Mexico are potent reminders that all is not well on the planet. The biologist E. O. Wilson wrote of the "mindless horsemen of the apocalypse" who were over harvesting and bringing foreign species, disease, and habitat alteration to the environment (1992, p. 253). For environmentalists there are several reasons why companies destroy habitats:

- People are self-interested and shortsighted, and so too are companies that act to maximize this year's profits. Companies are not interested in the long-term effects of their actions, so they deplete sources and destroy habitats indiscriminately.
- Companies do not care for people's property rights compared to the money they can earn, so land is cleared of people who happen to be in the way.
- Animal activists within the movement say the same with regard to species: Companies do not care to consider the effects of their actions on local species.
- Population growth adds pressures on habitats as urbanization spreads outward and the demand for food and meat grows.
- End users are also to blame: Few consumers consider where their products come from and the potential environmental impacts they have.

For environmentalists, the shortsightedness of corporations and consumers needs balancing by activism to remind people of their responsibilities of care toward the planet and its people and animals. Similarly, because animals are speechless and cannot understand why their lives are being disrupted, it is also up to activists to raise concerns and to try to stop habitat destruction.


*Efrem Lukatsky/Associated Press*

**Activists from Greenpeace use a variety of means to bring attention to different environmental causes.**

There are arguments about how this may be best brought about. Some demand that governments impose stricter controls on companies' actions, where as others are skeptical of using political processes and prefer instead to aim at educating people, especially the young, to change their lifestyles. If people are taught about the crises affecting the many habitats in the United States and around the world, politicians and companies will then have to listen to consumers' demands and expectations that they act responsibly.

Others, like the activists from Greenpeace, prefer direct action that draws media. In 2008, activists locked logging equipment and used a plow to carve "CLIMATE CRIME" in the grass next to a deforestation project in New Zealand. In 2009, they scaled Mount Rushmore to draw attention to global warming. In 2011, they gate-crashed a climate summit in Denmark and stormed several French nuclear power stations in a nonviolent attempt to show how vulnerable the stations were. As a protest against Arctic offshore drilling, in 2015 they boarded a drill rig as it was being transported across the Pacific Ocean.

Such activism attracts media attention, but the activists also run the risk of imprisonment and fines, so Greenpeace trains its activists to use nonviolent action to help reduce government attempts to punish them. More extreme groups push the boundaries, and various acts of Congress now prohibit doing malicious damage to property and harm to people in the name of environmental or animal rights. For example, some deforestation activists sabotage the equipment of logging companies, or nail metal spikes into trees that will snap the chainsaw's blade if hit. These actions are not only illegal, but the Federal government designates them as acts of eco-terrorism, which bring on further punishments.

Can environmental activism—even when moderate—be justified? Many environmentalists see an imbalance of politics and justice in favor of corporations, and their intention is to redress the disparity so the voices of millions of concerned but politically powerless people can be heard. The big companies raise millions from stock markets, have massive advertising budgets, and easily attract newspaper headlines; environmentalists, by contrast, do not have the resources to continually put their message out around the world. Against corporations' huge budgets, environmentalists who wish to raise consciousness concerning habitat destruction sometimes use inexpensive methods that gain high leverage.

## The Regulatory Response

Governmental regulations aim to address the full range of environmental problems caused by businesses. For example, in response to problems of habitat destruction, regulators accept that companies seek to maximize profits, so they believe that by adjusting incentives in the right direction, the mass destruction of habitats can be avoided. For instance, to avoid deforestation, timber companies can be forced to plant new trees for every one they cut. Or the license fees allowing companies to exploit habitats could be used to set up more national parks.

Regulators must strike a balance between ensuring that habitats are managed well and providing local jobs. When regulators get the balance wrong, they can upset of lot of people dependent on the timber or quarrying industries; if the companies exploit too much, that in turn upsets environmentalists. Let's look at the effects of Federal legislation on the timber industry.

### *The Organic Act of 1897*

The Federal government owns almost 30% of the land area in the United States, and there are many competing pressures on its use from vocal environmentalists and equally vocal company and union lobbyists seeking to protect jobs. The Organic Act of 1897, signed by President McKinley, was the first law designed to administer and protect the government's forestry reserves and to balance between industrial needs, conservation, and public access. However, in 1922, the

Izaak Walton League, a conservation group, claimed that the act was not protecting the timberlands at all and that clear-cutting was being used to switch land use over to sheep grazing. It took 51 years for the group to successfully sue the government for permitting clear-cutting, and this in turn encouraged a new look at habitat conservation.

### *The National Forest Management Act of 1976*

The Organic Act had failed to secure a balance, so it was replaced by the National Forest Management Act of 1976, which provided guidelines on where, when, and how trees could be harvested. For Senator Hubert Humphrey, the new act reflected a shift in philosophy:

> The days have ended when the forest may be viewed only as trees and trees viewed only as timber. The soil and the water, the grasses and the shrubs, the fish and the wildlife, and the beauty of the forest must become integral parts of the resource manager's thinking and actions. (as quoted in "National Forest Management Act (NFMA)," n.d.)

The act stressed the importance of the wider habitat and permitted logging only when the soil, slopes, and water flows would not be permanently damaged. In turn, the act sought to avoid the short-term thinking that had led to clear-cutting under the Organic Act and instead to create a program of multiple and sustainable use that would last. However, pressure from timber companies has, according to environmentalists, led to a watering down of the act, which leaves the problem that corporations will increase pressure to permit exploitation.

As noted before, the goal for regulators is to maintain a balance between these competing needs. Yet for critics, it is an impossible task. The problem for some critics lies with the presumption of government ownership. If the government owns land, there will inevitably be conflict over use, and habitats will be either overexploited or under exploited, leaving all stakeholders unhappy.

## 9.4 Resource Depletion and Sustainability

As the population of the world continues to grow, there are concerns not just for the habitats that are destroyed by humanity's encroachment but also for the resources that we are exploiting. Similar principles to those discussed before, regarding habitat destruction, can guide our thinking here: If resources are held by governments, there is an incentive on the part of companies to exploit and remove as much as they can while it is available. In addition, there is the difference between depleting a renewable source such as timber and a nonrenewable resource such as oil that generates much concern.

For many decades, the notion of **peak oil** has haunted discussions of the oil industry. The argument is as follows: As the population expands, humanity's use of oil increases. But the amount of oil in the ground is essentially fixed, and so as we consume more of it, we must be exhausting its stock. Eventually, there will come a point when we are using more oil than we are discovering or pumping to the surface. This is peak oil. After that, the price of oil will

*Larry MacDougal/Associated Press*

**Dependence on oil results in high amounts of pollution and risks creating global economic collapse once peak oil is reached and oil availability begins to decline.**

rise, causing economic disaster for the entire global economy, since so many products, from industrial chemicals and transportation to clothing, are dependent on oil.

The United States began oil production in 1859 and hit a peak of 10 million barrels a day in 1970; after some decline in subsequent decades, it continues around that level today. Nevertheless, 30% to 40% of U.S. oil is now imported, and as global oil production hits its peak and then begins to dwindle, the United States may find itself struggling to maintain its oil-dependent economy: "We are in for an epochal period of contraction and strife around the world" (Kunstler, 2005).

In response to the threats of peak oil, governments and industries seek alternative energy sources through advancing technologies that will have fewer detrimental side effects. As the resource is depleted, its price will begin to rise, which in turn will encourage people to cut back on their consumption as well to purchase automobiles and engines that use oil more effectively. There is also the added incentive for companies to expand into other sources of energy production.

## What Would You Do?

As the CEO of a medium-size company, you are concerned with the impact of the company's production on the broader environment. Your factory uses several hundred thousand dollars of electricity annually, and you have permit rights to release waste into the local river. Your predecessors have not had to worry about energy costs, and the attitude of the company toward pollution has always been one of "out of sight, out of mind." If you engage in greener production, profits may fall and shareholders may lose dividends. If the share price falls, you know that, in the current environment, you would be making the company and all of its employees vulnerable to a potential aggressive takeover.

1. Should you go green and invest in relatively more expensive lighting and photovoltaic panels on the roof? Why or why not?
2. Should you keep the company financially secure from predatory takeovers and maintain an environmentally "dirtier" corporation? Why or why not?
3. Do you consider your position to be determined by the interests of the shareholders alone—and your maxim therefore to look after financial affairs only—or do you see yourself as someone with a vision of a better world, one that would attract alternative investors and green consumers?

# 9.5 Global Warming/Climate Change

One of the most potent concerns to emerge in the past 20 years is the effect of human activity on global temperatures. Since the 1980s, scientists have been worried about the effects that industrial and chemical production are having on the planet generally, rather than on a particular coastline, river, or landscape. First, there were concerns that fluoride compounds were affecting the ozone layer, as a hole in the ozone over Antarctica was opening up. This led to an international agreement to reduce and ban certain fluoride compounds. Then came concerns that our carbon emissions were having a global effect on world temperatures and, accordingly, on climate and sea levels. The two terms associated with this issue are **global warming** and climate change, which are commonly used interchangeably for the view that world temperatures are rising—although **climate change** used more accurately is a term that indicates that human actions are causing long-term, significant shifts in global weather systems, with effects as yet not fully known and much wider-ranging than a temperature increase.

Global warming is a contentious topic within society at large, and is even more so in the business community because of intense pressure to reduce carbon emissions, which can be very costly for companies. Because of these potential costs, businesses have every right to expect that social policies about global warming will be grounded in fact and not in fear or speculation. In our short discussion here, it is impossible to responsibly evaluate the scientific evidence for global warming. However, it is sufficient to note the current political reality: In the United States and throughout the world there are multiple laws aimed at reducing carbon emissions, and the scope of these laws is likely to increase rather than decrease in the near future.

Governments and businesses, political parties, lobby groups, and citizens have all offered opinions and recommendations to avoid global warming and climate change. The secretary general of the United Nations, Ban Ki-moon, stressed to businesses, "As business leaders, you must make it clear to your [political] leaders that doing the right thing for the climate is also the smart thing for global competitiveness and long-term prosperity" (as quoted in Wirth, 2009). For two decades the United Nations has held annual climate change conferences, including the 1997 landmark conference in Kyoto, Japan, which established the **Kyoto Protocol** to assess international progress in addressing climate change. But international treaties do not always meet expectations. Although 191 nations have ratified the Kyoto protocol, the United States, while a signatory to the intentions of the conventions that led to the protocol, has yet to ratify the agreement. Following a recent U.N. conference, one commentator noted that business leaders were simply waiting to see what their respective governments would do (J. A., 2011). That is, corporations would act in response to what their national governments enacted rather than based on the idealism set out in an international treaty.

## Environmentalist and Free Market Responses

While the public debate about what corporations should do about global warming continues, environmentalists remind us of the explicit effects of pollution: Habitats are being destroyed, and in the long run, we are harming ourselves. Therefore, they add, if we are heating up our planet, we have a duty to stop. Businesses are in a position to take a leading role in avoiding adding anything that could cause climate change or global warming. On the other hand, some

free market advocates insist there should be noncontroversial evidence that some people and corporations are actually causing harm before they are punished or cajoled into changing their behavior through fines, taxes, and regulations. Criminal law is underpinned by the principle of a crime having been committed before someone can be blamed and charged. If there is no evidence, companies and people cannot be blamed.

Yet if corporations are more adaptable than governments, perhaps they can lead the way by taking ethical stands on global warming. When we think of Steve Jobs, the late CEO of Apple, we think of a man who could innovate and challenge our expectations in the computer industry. Body Shop founder Anita Roddick shifted thinking on cosmetics, and Ray Kroc of McDonald's did so with regard to burgers. If these business people could shift our thinking on consumer products, then business can take up the mantle to become the proper vanguard for shifting our thinking on the environment.

In many respects, companies are leading the way. *Forbes* magazine presents a list of America's greenest companies, where we find Intel at the top of the 2011 list for having shifted electricity consumption to renewable sources by 75% (Dolan, 2011). In Austin, Texas, Austin Energy has a program for volunteers to have their home thermostats remotely controlled by the power company: If there is a surge in energy consumption because of a heat wave, the company has the ability to alter air-conditioning units. Similarly, some power companies are deploying smart meters designed to educate consumers about electricity use around the home as well as to let the power companies know of local power cuts (Patterson, 2010).

## Alternative Energy Sources

One of the biggest areas of commercial activity has been the search for alternative and renewable energy sources. Companies have responded to concerns of peak oil but also government and consumer pressure to find alternatives. One of those has been nuclear energy.

Following World War II, the trend was to encourage investment into nuclear energy as well as to continue mining for coal and drilling for oil and gas. By the 1960s, nuclear reactors were seen as offering a clean and efficient method for keeping up with growing demand for electricity. But attitudes about nuclear power dramatically shifted when, in 1979, the Three Mile Island nuclear plant in Pennsylvania suffered a meltdown in one reactor that led to 40,000 gallons of radioactive coolant being poured into the river surrounding the island. Concerns over nuclear power have only escalated with subsequent disasters. In 1986, the Soviet plant at Chernobyl went into meltdown, as did three of the Fukushima Daiichi plant's reactors in Japan following the dreadful tsunami in 2011. Indeed, there is a catalogue of 33 serious nuclear disasters around the world (Rogers, 2011).

Tellingly, the free market itself has serious worries about the safety of nuclear power: "Utilities considering building nuclear power stations discovered their investments could not be insured. [Lloyd's] of London, known for taking risks on just about anything, would not write a policy protecting a nuclear power plant" (Keisling, 2011). If insurance companies do not wish to underwrite a venture, the message is clear: The risks are too high. When private insurance companies refused to underwrite Three Mile Island, even before the disaster happened, the U.S. government stepped in to subsidize the insurance bill with taxpayers' money. This was,

in effect, an admission that the industry could not go it alone and that a hazard had to be subsidized. This is analogous to subsidizing a commodity such as tobacco, which generates health costs for others as well as for the consumer. The nuclear industry is still being heavily subsidized by taxpayers around the world. In fact, in 2010, direct subsidies to nuclear power amounted to over $3 billion ("Energy Subsidies and External Costs," n.d.).

For critics of nuclear power, the nuclear industry can be seen as too much too soon or, more pessimistically, as an uncontrollable human and environmental disaster for the present and future. It is inherently unsafe, and the nuclear industry itself is too tied up with local officials, who turn a blind eye to safety issues. But there are also those who believe that lessons from such disasters have been learned and that nuclear power is a viable option. It has the potential to produce most of the nation's electricity, and the technology and safety have improved in the wake of problems. Ultimately, in spite of the environmental risks, nuclear power may be here to stay as one of several energy alternatives to fossil fuels.

## 9.6 Environmental Restrictions Versus Economic Freedom

Although the United States was founded on the principle of human freedom, successive U.S. governments have instituted laws prohibiting commercial exploitation of various landscapes that they deemed intrinsically worth protecting.

### U.S. Laws and Private Trusts Restricting Access

In 1832, President Andrew Jackson encouraged the passing of the first congressional laws on areas of natural beauty deserving Federal protection. The first area protected was the Hot Springs Reservation (now National Park) in Arkansas. This was followed by Lincoln's securing of the Yosemite Valley and the Mariposa Grove. In 1872, Yellowstone National Park was formed by Ulysses S. Grant to secure its protection. In 1916, Woodrow Wilson formed the National Park Service to oversee the management of the national parks and other natural and historical areas, which now number more than 400 and cover 84 million acres of land (National Park Service, 2015). Yosemite, Yellowstone, the Grand Canyon, and many other sites also became UNESCO World Heritage sites following an international ratification of their special status to humanity as a whole. The United States played a leading role in developing World Heritage sites following a White House conference in Washington, DC, in 1965, and its proposals were eventually ratified in 1972 by the general conference of UNESCO ("The World Heritage Convention," n.d.).

Normally, we consider safeguarding key areas of outstanding beauty to be a role of government, but private owners also create legal trusts to protect the landscapes they love. There are currently over 37 million acres that have been voluntarily protected in the United States (Land Trust Alliance, 2015). Critics complain that governments tend not to manage property well and that the national parks should be turned over to private trusts. The argument is less with the impact of a potential industrialization of the parks than with the efficiency of their management (Lora, 2007).

Private individuals, lobbyists, and governments show their concern with protecting the environment from industry, but does this run counter to the economic freedom of present or future generations to enjoy a cash flow from beautiful areas?

## The Problem of the Beautiful Valley

Consider a valley with a flowing river and ancient woodland surrounding it, inhabited by a wide variety of flora and fauna; the views are breathtaking and the air is fresh. The river is swimmable and has a broad range of fish; fruit grows well in the autumn, and the valley protects its inhabitants from the ravages of winter. It is an idyllic place to settle.

*iStock/Thinkstock*

**A pristine landscape untainted by human interference: Is it better left alone or should it be developed so more people can have access to its resources?**

From the environmentalist position, the pristine nature of the valley gives it a primary objective value that trumps all other human interests: It should be left as is, with only a few people being able to appreciate the rural paradise. From an alternative, commercial perspective, the land offers excellent possibilities for a tourist resort or a rural retreat for families or retired folk. If power and roads were brought to the area, the valley could provide hundreds of jobs and transform a zero-economic-value area into a multimillion-dollar complex of businesses and supporting industries. Where there is nothing but wilderness, the business investor sees the potential to serve other people through job creation and the building of accommodation and recreational units. It may be acknowledged that the environment suffers, but the benefits brought forward are for people. And corporations are in the business of serving people, not squirrels and fish. But should there be any restrictions on what they can do? And who should formulate those restrictions, and on what grounds?

The two opposing visions of exploiting the landscape and leaving it alone can merge into green business projects. These attempt to develop pristine wilderness for human enjoyment while not losing any of the ecological breadth and natural beauty found there. Imagine off-grid wooden cabins where environmentalists come to study and research the area and families come to get away from the urban sprawl, enjoy fresh air, and get closer to nature. If a middle path is attempted, sometimes well-meaning people fall afoul of laws that restrict environmentally friendly development. After all, corporations have to respond to the legal framework that they operate in.

Sometimes, however, the legal framework is not as objective and impartial to human and environmental interests as it may appear. Much legislation is the product of lobbying and of politicians' trying to garner votes rather than stick to principles. Such actions may or may not reflect

the values that the general population would support or that would reflect the environment's needs. In the great emotional debate that sometimes affects environmental issues, governments and corporations haggle over what is known as a cost-benefit analysis of actions.

### What Would You Do?

Imagine that you inherit an idyllic valley from a distant family member and you set eyes on it for the first time. Several thoughts rush through your mind. As a business venture, it could generate a healthy income from renting cabins around the water's edge and selling hunting rights. However, it could instead be left alone for you to pass on to the next family member, and in your lifetime, you and your family could enjoy peaceful evenings by the campfire.

1. What do you envision—a thriving business venture or a valley to keep as it is? Why?
2. Would your mind change if a geologist informed you of rare minerals that had been detected along the shore? Why or why not?
3. Do people have rights over such landscapes or, as some thinkers hold, do such landscapes have rights over us? Explain your answer.
4. Suppose that you could turn the valley into a designated nature preserve that would generate significant tax savings and allow educational research, but you would lose control of what could be done on the property even though you still owned it. Would that be an attractive option?

## Cost-Benefit Analysis of Environmental Responsibility

As the size of the Federal government, and thereby its jurisdiction, expanded following the New Deal of the 1930s, the justification for government projects took on a more scientific, or economic, approach. Rather than just proceed with a flood control project, a dam, a power station, or a road through the woods, for example, government agencies were told to check whether the benefits outweighed the costs. After World War II, there was a global pressure on governments to ensure that they were acting efficiently and spending taxpayers' money wisely on large infrastructure projects such as dams and roads (Organization for Economic Cooperation and Development, 2006). Agencies and the economists they employed had found a fruitful ground to proceed with seemingly scientific studies that would be used to explain the balance of merits to taxpayers. Cost-benefit analysis became increasingly popular with agencies and later with lobbying groups and corporations, who would come up with opposing numbers to justify their own positions.

However, in the past few decades, cost-benefit analysis has come under increasing criticism on philosophical and methodological grounds (Adler & Posner, 1999). For supporters, cost-benefit analysis has many advantages over simply plowing ahead with a project regardless of the effects on human and environmental welfare. The social benefits must be seen to outweigh the social costs across society. The analyst proceeds by adding up the willingness of people to pay for the benefits that come from the project, or their willingness to be compensated for any negative impacts. The benefits are then discounted over time, as present benefits are held to have a higher value than future benefits. In the adding up of values, society is held to be the sum of individuals, and each individual's financial status should be accounted for. But rather than assuming that each person counts for one, cost-benefit studies typically assume that

lower income or disadvantaged people should gain more than the rich when infrastructure projects are planned. This means that a short-term project can have a greater beneficial flow than a long-term project, and one that brings more jobs to a disadvantaged area has a higher worth than one that brings jobs to an already booming area.

Criticism of cost-benefit analysis comes from several areas:

- The methodology can be questioned. The studies assume that poor people will enjoy higher benefits than the rich when projects create jobs, for instance. This is not necessarily the case as (a) an outsider cannot judge what is valuable to other people and (b) the jobs that are created may be geared mainly towards the rich.
- The weightings provided by the analysis can be criticized. People are generally given more weight than animals and ecological systems in-themselves, which is a debatable assignment of value.
- Most importantly, the entire enterprise can be rejected on the grounds that the values imposed on companies and people are basically made up.

## Social and Private Costs

In a market, the price reflects the private valuation that both the buyer and the seller place on the good or service. But what the market price does not reflect is the social value, or the social costs incurred in the production or consumption of the good or service. These social costs provide a rationale for intervention and hence for the imposition of taxes and regulations on trade. The distinction arises between the costs as assessed by the accountants of the firm and the costs that are incurred by other stakeholders and by the environment but are not accounted for by the producers.

For instance, a timber company cuts down trees that are then used by the paper industry. The products in turn are used by book producers and read by consumers. At each stage of production, a certain profit is made, and the consumers exhibit their valuation of the books produced by either buying them or not.

But now consider the same scenario from an environmentalist viewpoint. The cutting of timber removes the natural habitat of several species that, in turn, have an effect on other species through the food chain. This produces an irreversible alteration that affects the ecological health of the environment. The trees become more susceptible to disease and the diseases spread, leaving the timberland weaker. At this point, the companies may react and alter their production methods because their financial health is also being threatened. But perhaps the company is only interested in reaping profits from the landscape once and it possesses no incentive to alter its methods.

The private costs of a logging company often do not include the total environmental costs, such as the impact of logging roads in forests, the decrease in biodiversity, and the increase in atmospheric carbon dioxide. These hidden environmental costs are frequently described as negative externalities. **Externalities** are consequences of an economic activity that are experienced by unrelated third parties and not reflected in the market price of goods or services. Logging companies thus create negative environmental externalities—that is, environmental costs—that are passed on to outsiders, such as the public and governments.

The argument is then proposed that instead of the company charging the market price for the timber, a surcharge should be added to reflect the extra costs borne by the environment and people affected by the logging industry. This surcharge, typically a tax, forces the corporation to include the externalities in its own accounting; this can, depending on consumers' responses, reduce the overall profits of the trade and discourage timber companies from proceeding carelessly. However, if consumers' demand is unaffected by the higher after-tax price, then the company's profits can indeed expand, which may be contrary to what the environmentalists expected. That, in turn, may encourage further logging.

Between the corporations and environmentalists, government officials consider the nature and extent of the externalities. Each side may come up with wildly differing results, and the government official may then have to choose between the different reports. Imagine the pros and cons of building an airport in a small rural town and the impact that such an imposing project would have on the surrounding environment. The official may then try for a compromise to appease both sides as well as the local residents. At its best, this is what politics is about: finding a working solution between different interest groups.

Despite decades of environmental laws and cost-benefit studies, pollution and habitat destruction continue, and in the wake of the Deepwater Horizon oil spill and the nuclear pollution pouring out of the Fukushima Daiichi nuclear power plant, the evidence of our impact on the world is growing.

## Conclusion

Environmental responsibility is a complex matter with competing values and priorities; it is now a permanent part of our moral, political, and economic landscape that cannot be ignored. It may take decades or even centuries to address the most troubling environmental problems, and, along the way, businesses will be at the forefront working towards solutions. Environmentalists remind us that the duty to care for the Earth is as important as the duty to respect one another. Cost-benefit analysis can tell us which approaches to environmental sustainability are economically realistic and which are not practical, at least for the time being. Governmental regulations can establish a level playing field for business competition by mandating environmental policies that all industries must follow. Hopefully, with the cooperation of all key players, we can avoid the worst environmental calamities for ourselves and future generations.

## Summary & Resources

### Chapter Summary

We began this chapter looking at different types of environmental concerns, the most serious of which may put the world community at great risk. Much environmental damage comes from the activities of business and heavy industry, and environmentalists argue that such practices need to change. The heart of the ethical issue rests on two different ways of looking at environmental responsibility: environmental anthropocentrism says that such responsibility is only indirect and derived from the responsibility to humans, and biocentrism says that

such responsibility stems from a direct duty to the environment for its own sake. In either case, there is at least some agreement that the problem of environmental damage is genuine and needs to be addressed.

This chapter looked more closely at the issues of pollution, habitat destruction, resource depletion, and global warming. There are not only competing solutions to these problems by environmentalists and free market advocates, but regulations imposed by the government that often mediate between the more extreme ideologies. A common technique for making decisions in business is the cost-benefit analysis; one challenge with applying this methodology to environmental issues involves taking into account not just the private costs to businesses, but also the social costs—or negative externalities—that the government and society might incur.

## Discussion Questions

1. Our thinking about the world around us has an effect on how we relate to and behave towards it. We are increasingly aware that many of our industrial and chemical processes have an impact on the world we live in. To what extent does learning about the environment have an effect on your personal choices and the purchases you make from businesses?
2. A power station is planned in your area and you have been requested to submit a primary cost-benefit analysis of the potential economic and environmental impact that the station could have. Prepare a list of pros and cons and a preliminary judgment on whether the project should go ahead.
3. The Federal government manages millions of acres of forest land across the country, but there are increasing pressures on the agencies to permit varying levels of commercial access to the timber, other resources, and water flows. Should the government have an absolute prohibition on commercial access or should there be a working compromise with companies?
4. Free market supporters believe that many pollution and habitat issues could be resolved if the lands in question were turned over to private individuals and companies who would have an incentive to look after them better and even to help add value to them. Do you think that all environmental problems could be solved if the land, rivers, and coastline were privately held, or do you think there would be other problems to contend with?
5. When we flick a switch on a device, we consume electricity, and often it is difficult to know what the source of that energy is: nuclear, wind, solar, coal, water, or oil. Do you think electricity companies have a duty to inform customers how their electricity is produced, and would you be interested if they did?

## Key Terms

**biocentrism** The view that we have a direct responsibility towards the environment itself for its own sake and not merely because of the impact that treatment of the environment has on humans.

**cap and trade** The term describing the right of companies to pollute up to a maximum and then trade any unused rights on the market.

**carbon tax** A tax on any carbon-emitting factory or product, such as cars.

**climate change** The theory that human actions are causing a wide array of long-term changes to global weather systems.

**emissions rights** The legal ownership, which companies can trade with other companies, of the right to pollute up to a maximum.

**environmental anthropocentrism** The view that our sole moral responsibility is to human beings, and all obligations that we owe to the environment are only indirect, based entirely on how treatment of the environment impacts humans.

**environmentalism** A social and political movement to protect the natural environment from destruction or pollution.

**externalities** Consequences of an economic activity that are experienced by unrelated third parties and not reflected in the market price of goods or services

**global warming** The view that pollution of the air is causing the Earth's average temperature to rise.

**Kyoto Protocol** An international declaration that sought to reduce carbon emissions around the world and reduce the threat of global warming.

**peak oil** The notion that there will come a time when humanity has exacted a maximum amount of oil from the ground, after which oil supplies will deplete quickly.

## Business Ethics Case Study 9.1: Interface Carpet and Environmental Sustainability

If we think about environmental responsibility in the business world, a commercial carpet company would not likely come to mind. Carpets are made mostly from petroleum products, manufacturing them requires massive amounts of energy, and they routinely need replacing, which means dumping the old ones into landfills. But, defying expectations, Interface Inc., the world's largest manufacturer of modular carpets, has a radically progressive approach toward environmental sustainability that is reflected in every part of its operations. Credit goes to the company's founder and long-time CEO Ray Anderson. He began his company in 1973 with the pioneering idea of modular carpet tile—carpet that is patched together on the floor from squares of a few feet, rather than the normal broadloom variety that is laid down from long carpet rolls. His original design for carpet tiles was no more environmentally friendly than traditional broadloom carpeting, and Anderson states that for 21 years he gave no thought to the environment other than that it was the source of the raw materials that he needed in the manufacturing process.

But, pressured by customers who wanted to know his company's environmental position, in 1994 he sought guidance from Paul Hawken's book *The Ecology of Commerce.* In that work, Hawken relentlessly attacks industry and the entire economic system for destroying the environment. Within nature, everything is recycled, but industrial production is the opposite: it is linear in that it takes from nature, consumes non-renewable energy resources, and creates enormous waste and pollution. For Hawken, change will only occur when businesses follow an ecologic economic system that mimics the natural process of recycling. However, he argues, the changes that businesses go through must still honor market principles. Hawken writes,

## Business Ethics Case Study 9.1: Interface Carpet and Environmental Sustainability (*continued*)

> No "plan" to reverse environmental degradation can be enacted if it requires a wholesale change in the dynamics of the market. We have to work with who we are—which includes our strong instinct to shop the market and buy products of comparable quality at the lowest price. We can't just ask people to pay more to save the planet. They won't do it in some cases—and can't in most. (*The Ecology of Commerce*, xv)

Anderson describes Hawken's book as a life-changing moment for him, like a spear through his chest. He realized that his company had been plundering resources that were not his but belonged to everyone on the Earth. Someday, he thought, this kind of plundering will be illegal and people like him will be put in jail. He thus accepted Hawken's challenge of working toward environmental sustainability while at the same time following the market and striving to make his company profitable. To that end, he and his managers analyzed every aspect of their operation for environmental negligence and then looked for environmentally sustainable alternatives that saved money. This led to manufacturing innovations that reduced waste, many of which the company has patented.

Since 1994, Interface has reduced its energy consumption by 40%, with 45% of its current energy uses coming from renewable resources. Its goal is to reach 100% by 2020, and one of its European facilities has already achieved this. Greenhouse gas emissions have been reduced by 73%, water use by 87%, and in its California plant, water is treated and used for golf-course irrigation. Fifty percent of the raw material in its carpets is from recycled sources, and its recycling innovations have taken several forms. Interface works with fishing communities abroad to collect discarded nets—which otherwise harm marine ecosystems—and recycle the nylon. It reclaims old carpets, separates the face from backing, and reuses the refined material in new ones. It distributes the plastic that it cannot use to other industry suppliers. It has reduced the distribution of carpet samples, relying instead on realistic digital images and mailing physical samples upon request with free return postage. Many of the company buildings are certified as "green" by third-party organizations. In an effort to make its transportation fleet carbon-neutral, it has partnered with Subaru of America, which purchases carbon offsets for the first 60,000 miles of its vehicles.

Throughout its movement towards environmental sustainability, Interface has increased sales by 66%, doubled its stock earnings, and raised its profit margins—and all this within a highly competitive industry. It has thus defied the longstanding assumption that environmental sustainability and profit are incompatible. Anderson died from cancer in 2011 at age 77, and to the end he retained his conviction that traditional ways of doing business need to change. In a book he wrote prior to his death, he states,

> Irresponsible business—the diggers, the drillers, the processors of poison, all of whom ought to know better—they and their abusive industries—are a cancer on society. . . . It's high time we all started the right treatment of this hateful disease that is inflicted on the earth by us humans before it takes us all down. (*Business Lessons from a Radical Industrialist*, xiv)

The environmental vision that Anderson established for Interface continues today as the centerpiece of its corporate culture, and is reflected in its mission statement: "We believe that change starts with us and is transforming Interface from a plunderer of the earth to an agent of its restoration. Through this process of redesigning ourselves, we hope to be a catalyst for the redesign of global industry."

## Business Ethics Case Study 9.1: Interface Carpet and Environmental Sustainability (*continued*)

### Discussion Questions

1. Anderson maintains that his company's approach to environmental sustainability with carpet manufacturing can serve as a model for other industries. Is he correct, or are there some manufacturing industries that cannot be made environmentally friendly?
2. Hawken argued that the movement toward sustainability within business must honor the market, and not depend on the willingness of people to pay more to save the planet. Is Hawken correct?
3. Anderson suggests that business's usual practice of plundering the Earth for natural resources may someday be illegal. To what extent is that already true, and, if that does happen fully, would that be good or bad? Explain your response.
4. There is no doubt that Interface has been financially successful. Suppose, though, that in 1994 Anderson looked into a crystal ball and saw that his company would be twice as successful as it currently is if he remained an environmental plunderer. Should he still have pursued the goal of environmental sustainability?

Sources: Anderson (2009), Hawken (1993), Interface (2015).