9
ENVIRONMENTALLY ORIENTED BUSINESS

Throwing Shade

Source: Photo by zhang kaiyv on Unsplash.

China and Climate Change

In many respects, China is the greenest country in the world. It has more wind and solar power in place than any other country (Hook, 2019). Yet, China is also the leading builder of new coal plants, and accounted for 27 percent of global CO_2 emissions in 2017 – more than the

(Continued)

combined percentages of the US (15 percent) and the EU countries (9.8 percent) combined (Ritchie and Roser, 2020).

While China is the largest clean energy market in the world, wind and solar accounted for 5.2 percent and 2.5 percent of the power generated in China in 2018 (Slav, 2019). But lack of efficient use of solar panels plagues China. For example, a major issue for China is curtailment – the amount of solar energy that is generated but is not purchased because it cannot be absorbed by the electricity grid (Standaert, 2019). In 2016, 17 percent of solar energy generated could not be used. In 2018, seven percent could not be used.

The air quality in many places in China is so bad that solar energy production is reduced from 15 to 11 percent (Locker, 2019). In 2018, 59 percent of China's energy came from coal (ChinaPower, 2020) compared to about 18 percent for the EU (Eurostat, 2020). One half of the world's coal that is burned every year is burned in China (EDF, 2020). From 2011 to 2020, China consumed more coal than the rest of the world combined (Temple-West, 2020).

In 2017, China launched its national carbon market that covered the power sector which includes more than 1,700 (mostly state-owned) companies responsible for about one-third of China's carbon emissions. This would make China's carbon market the world's largest. Plans call for this national carbon market to gradually take in about 7,000 Chinese firms across eight industrial sectors, such as (1) power, (2) petrochemical, (3) chemical, (4) building materials, (5) iron and steel, (6) nonferrous metals, (7) paper production, and (8) aviation. These firms would account for more than 9 percent of 2017 global emissions. However, China's carbon market has struggled to take off because of the difficulties in establishing a comprehensive data collection system that would enable policymakers to set targets and allocate carbon credits based on these targets (Temple-West, 2020).

Despite this ambitious effort to use the market-based incentives of a carbon market to reduce carbon emissions (in which firms would be assigned limits on carbon emissions and those cutting their emissions would sell the amounts they don't emit to other firms emitting more), the general momentum on climate and environmental issues has declined since 2014 when the Chinese economy grew strongly (Hook, 2019). With slow economic growth, the top political priority for China's leaders becomes stabilizing the economy.

Despite concerns of China's leaders about the country's prospects for economic growth, China claims the largest share of global manufacturing output with 28.4 percent in 2018 (Richter, 2020). The combined shares of the next three countries amounts to 29.6 percent (US 16.6 percent, Japan 7.2 percent and Germany 5.8 percent). China is a manufacturing superpower – which means its role in carbon reduction and climate change mitigation will remain a crucial one for the world.

In sum, the size of China's economy and its economic growth enable it to play a key role in reducing environmental degradation in the future. But whether China is a net benefactor of the global environment or a net detractor of the global environment remains to be seen.

While China has bolted to the forefront of renewable energy deployment, it continues to build coal-fired electricity-generation plants – not only in China, but around the world

through its Belt and Road Initiative (E360 Digest, 2019). This initiative is a multi-trillion-dollar investment strategy aimed at building infrastructure in 126 countries around the world through Chinese investment. In a 2019 report by researchers in China, the US, and the UK, researchers estimate that if development continues as planned, the carbon emissions from these countries would more than double by 2050 resulting in a 2.7 degree rise in warming of the planet.

Questions to Consider

- How would you say things are going in China regarding energy efficiency?
- How would you say things are going in China regarding climate change?
- Who would you say has a more important role in addressing climate change: China, the US, or the EU? Explain.
- What would it take for China to drastically reduce its use of coal? Explain.

CHAPTER OVERVIEW AND LEARNING OBJECTIVES

Through a presentation of exemplars, this chapter will showcase some of today's most important topics in environmentally oriented business. Among these are (a) the background for environmentally oriented business, and (b) the roles of government, big business, and entrepreneurial ventures in greening the marketplace. The Patagonia story suggests how a firm might emphasize environmental activism in its endeavors. Firms such as Patagonia are on a mission to make money, serve humanity, and help the planet (Lovins, 2010). These are triple-bottom-line firms who meaningfully integrate people, planet, and profits into their marketing and operations.

Conservation is a foundational concept of environmental stewardship, which is embraced by companies such as outdoor retailer REI, Inc. Today, conservation of the atmosphere's ability to regulate our climate is emerging as an important issue. National governments continue to debate what can be done while the provincial government of British Columbia has enacted a carbon tax in order to reduce greenhouse gas emissions that are harmful to the atmosphere. In 2005, Walmart changed course and declared itself as pursuing an environmental orientation. By 2009, Walmart's CEO had appeared twice before Congressional committees asking for limits on greenhouse gas emissions.

Finally, this chapter will look at Neiman Enterprises CEO Jim Neiman, who explains what it took to transform his business into one that is more environmentally oriented. This forest-products company based in Northeast Wyoming took 10 years to obtain certification from the Sustainable Forest Institute because Neiman wanted his employees to understand the value of

adopting sustainable business practices rather than have them imposed on them by his decision. Neiman will be featured as a Maverick Who Made It.

After this chapter, you should be able to answer the following questions:

- What does it mean to become an environmentally oriented business?
- How important is the concept of conservation to environmental stewardship?
- What are the six natural-resource systems the Environmental Protection Agency (EPA) has proposed to be the focus of environmental stewardship?
- How do common goods differ from public goods?
- Is the atmosphere surrounding our planet a public good or a common good?
- If the natural infrastructure that supports civilization becomes degraded and incapable of reliably performing services to humans, can national governments be expected to work together to repair this natural infrastructure?
- What role is the US government now taking to reduce greenhouse gas emissions?
- What other actors are taking action to reduce greenhouse gas emissions in the US?

PATAGONIA AND THE ENVIRONMENT

When told he could pursue an initial public offering (IPO) to sell shares in his privately owned company, Yvon Chouinard (pronounced 'shun ARD'), owner of Patagonia (a designer, marketer, and distributor of high-performance outdoor wear based in Ventura, California), shook his head. 'That would be the end of everything I've wanted to do,' Chouinard said. 'It would destroy everything that I believe in' (Casey, 2007, para. 39).

In 2019, Patagonia's fleece vests had become the fashion trend in Wall Street firms who had their firm's logo stitched on the front of the vest (on the other side of the vest from the Patagonia label) (Otani, 2019). To the chagrin of the finance workers who might regard themselves as future tycoons, Patagonia announced it was keeping new orders of its torso-hugging vests for 'mission-driven companies that prioritize the planet'. In the future, private-equity firms, banks, oil companies, mining companies and start-ups must persuade Patagonia they are helping America turn green. 'They're trying to protect their brand from being taken hostage by this image of Wall Street bankers,' said Patrick Curtis, chief executive of financial careers website Wall Street Oasis.

Chouinard is a successful entrepreneur whose story inspires his devoted contrarian employees (where 900 apply for every job opening) (Casey, 2007). Today, leaders of other businesses, such as Walmart, seek Chouinard's counsel in seeking solutions to what Chouinard describes as the environmental crisis.

Chouinard readily expresses irreverence for traditional business and a reverence for nature. In the introduction to his book *Let My People Go Surfing: The Education of a Reluctant Businessman* (2005), Chouinard begins with brutal honesty:

> I've been a businessman for almost fifty years. It's as difficult for me to say those words as it is for someone to admit being an alcoholic or a lawyer. I've never respected the profession. It's business that has to take the majority of the blame for being the enemy of nature, for destroying native cultures, for taking from the poor and giving to the rich, and for poisoning the earth with the effluent from its factories.
>
> Yet business can produce food, cure disease, control population, employ people, and generally enrich our lives. And it can do these good things and make a profit without losing its soul. (p. 3)

Chouinard describes Patagonia (www.patagonia.com) as an experiment to challenge conventional wisdom and present a new style of responsible business (Chouinard, 2005, p. 5). In this way, Chouinard intends to present an alternative to the endless growth implied by capitalism that deserves the blame for the destruction of nature. He declares that he and his employees have the means and the will to prove that doing the right thing leads to a good and profitable business.

Today, Patagonia is organized around environmental activism (Beer, 2019). In 1996, the firm articulated its statement of purpose that sets the firm on a course to 'build the best product, do no unnecessary harm, use business to inspire and implement solutions to the environmental crisis' (Patagonia, 2011).

Almost 70 percent of its product line now comes from recycled materials (Corporate Knights, 2020). For example, Patagonia's Frozen Range parka is part of the Shell, Yeah! line of waterproof jackets that uses 100 percent recycled goose and duck down (reclaimed from cushions, bedding, and other used items that can't be resold) (Pettway, 2019). The two-layer Gore-Tex shell is made with polyester derived from recycled plastic bottles. Sixty-nine percent of Patagonia's garments include recycled materials. The firm aims to use only recycled materials or renewable materials by 2025 – the year the firm intends to become carbon neutral (Corporate Knights, 2020).

Patagonia and Philanthropy

The third part of Patagonia's mission statement is to 'use business to inspire and implement solutions to the environmental crisis' (Patagonia, 2011). Through philanthropy, Patagonia has created organizations that allow other firms to direct their philanthropy to environmental causes. For example, the firm co-founded the Conservation Alliance in 1989 with other outdoor companies, such as REI, The North Face, and Kelty (Conservation Alliance, 2020).

In 2001, Yvon Chouinard also founded 1 Percent for the Planet with Craig Mathews, owner of Blue Ribbon Flies outfitter and guide service for fly fishing based in West Yellowstone, Montana (1 Percent for the Planet, 2011). Chouinard and Mathews hatched a plan to encourage more businesses to donate 1 percent of sales to environmental groups. Chouinard called it

an 'Earth Tax'. Mathews suggested that it be named '1 Percent for the Planet.' Mathews' idea eventually won over Chouinard.

Every member company of 1 Percent for the Planet has the opportunity to engage in a dialogue with the rest of the 1 Percent for the Planet membership to foster new business relationships and to connect for sharing ideas and resources. 'Companies like Clif Bar, and New Belgium are members of 1 Percent for the Planet,' Lisa Myers Patagonia's Director of Environmental Grants said. 'These more than 1,200 members of One Percent for the Planet are our peers' (Myers, 2011, personal communication).

Patagonia's Environmental Wisdom

Much of Patagonia's environmental wisdom came in costly ways. In 1991, the firm was growing at 50 percent a year but became derailed during the savings-and-loan crisis (Corporate Knights, 2020). 'The bank reduced our credit line twice in several months and the company ended up borrowing from friends to meet payroll and laying off 20% of its workforce on July 31,' Chouinard recalled. 'That's a day I still refer to as Black Wednesday' (Chouinard, 2010, p. 5).

'We had become dependent, like the world economy, on growth we could not sustain,' Chouinard said. 'If I hadn't stayed in business, I never would have realized – the hard way – the parallel between Patagonia's unsustainable push for growth and that of our whole industrial economy' (Chouinard, 2010, p. 5).

Chouinard believes he learned the hard way to stop growing at an unsustainable rate and still stay in business. He and his team at Patagonia admit they do not have all the answers, but they take confidence when realizing that they have been asking the questions longer than anyone else. Today, Patagonia is a thriving firm posting more than $1 billion a year in sales (Mittica, 2019). The firm also has become a B Corp which requires it to consider its environmental and social impacts and could prioritize these ahead of profits (Patagonia, 2018).

Questioning Leads to Learning and Transparency

After this near-death experience for his firm in 1991, Chouinard and those who remained over-hauled the company mission statement and began asking questions. Growth for the firm was questioned. Soon, the employees of the firm were asking about the environmental harm caused by manufacturing and distributing clothes. 'That's the problem with questions,' Chouinard said. 'Once you start, you can't stop' (Chouinard, 2010, p. 5).

After opening a brand new store in Boston, almost everyone who worked there had a headache. It turned out that the clothing shipped to the store – made of cotton – was finished using

too much formaldehyde. Fixing the ventilation at the new store would not fix this problem. Accordingly, Patagonia's employees asked how cotton is grown. After getting answers, the firm switched over to organically grown cotton for its clothes made of cotton.

Afterward, questions came about conditions inside factories where Patagonia's clothes were stitched together. Many of these were in the Far East. What goes into dyes and finishes on clothing that would make them more water repellant? How about shipping and carbon footprints? 'It was expensive, time-consuming and deeply complex,' Chouinard recalled. 'As I said recently at Patagonia's Tools for Grassroots Activists Conference, a gathering of environmental activists at a camp in the Sierra Nevada, 'Leading the examined life is a pain in the ass. But it's worth it' (Chouinard, 2010, p. 5).

Patagonia's leaders are not shy about disclosing the damage their own company does to the natural environment. The firm's spirit of total disclosure can be seen in their launching of *The Footprint Chronicles*, an interactive minisite on its website, which details what the company makes and how it makes it in minute detail.

In recent years, Patagonia has moved into film production by making documentaries with messages about protecting the environment (Beer, 2019). These include *180 Degrees South* (released in 2010, retracing Chouinard's 1968 sea journey to Patagonia, Chile), *DamNation* (released in 2014, depicting the damage dams can do to ecosystems), and *Public Trust* (released in 2020, presenting the fight for America's public lands).

'We recognize that people make decisions based on emotion, and the best way to elicit emotion is through film,' Chouinard said. 'It's not through books or catalogs or speeches. So we're in the film business. We're working on ten films at a time these days. Some of them don't make a cent. But that's not the purpose.'

BACKGROUND FOR ENVIRONMENTALLY ORIENTED BUSINESS

Conservation

REI is a national outdoor retail co-op, based in Seattle, Washington, that began as a way for 21 mountain climbing buddies to obtain the outdoor gear they needed (REI, 2020a). In 2020, REI boasted more than 19 million members who pay a one-time $20 fee and most years received a REI dividend of 10 percent on purchases made. In this way, REI uses a co-operative (co-op) structure. In 2019, REI posted sales of $3.12 billion and invested 70 percent of its profits in the future of the outdoors. REI offers its own line of award-winning gear and apparel, in addition to products from the top brands for camping, climbing, cycling, fitness, hiking, paddling, snow sports, and travel. These other brands include Patagonia, The North Face, and Columbia.

REI declares itself to be passionate about the outdoors and committed to promoting environmental stewardship. For example, REI stays closed on Black Friday (the day after Thanksgiving in the US) as a way to deemphasize overconsumption, and instead encourages its member and employees to enjoy the outdoors with family and friends on this day (REI, 2020b). IT also offers rentals and the sale of lightly used REI goods in what it calls 're-commerce' (in-store 'Garage Sales' and online through the Used Gear Program). Those who take responsibility for how their actions affect environmental quality can be called environmental stewards (EPA, 2005).

Environmental stewardship is not new. Influenced by naturalists such as John Muir who petitioned the US Congress to pass the National Parks bill passed in 1899, Republican Teddy Roosevelt championed conservation during his US presidency from 1901 to 1909 (Gingrich and Maple, 2007, p. 28). It has been said that perhaps Roosevelt's greatest and most enduring contribution as president was instilling an ethos of natural resource conservation in Americans (Lallanilla, 2011). He also preserved some 230 million acres – about the size of *two* Californias and one Ohio – as national parks, national forests, game preserves, national monuments, and other federal reservations. He created the Forest Service and appointed renowned conservationist Gifford Pinchot as its head. On the way to these accomplishments, he showed future presidents and environmentalists how to achieve legislative success.

'The conservation of natural resources is the fundamental problem,' Roosevelt once said. 'Unless we solve that problem it will avail us little to solve all others' (Lallanilla, 2011, p. 1).

Conservatives, such as Paul Weyrich (founder of the Heritage Foundation think-tank), William Lind (an expert on military affairs), as well as former US Speaker of the House Newt Gingrich, give ringing endorsement to conserving natural resources. 'As conservatives,' Weyrich and Lind said:

> We believe in conserving many things: traditions, morals and culture, but also clean air and water, farms and countryside, energy [much of which must now be imported] and the soil itself, on which we all depend for our daily bread. Conservatives do not like waste. Reckless, frivolous, thoughtless consumption was never a conservative virtue. A society's real strength comes from production, saving and investment, not consumption. Earlier generations of Americans understood this and lived accordingly.
>
> (Weyrich and Lind, 2009, pp. 50–1)

Renowned Harvard biologist E.O. Wilson theorized that an innate bond exists between humanity and nature. He termed this love of life or living systems as biophilia (Gingrich and Maple, 2007, p. 26). With this in mind, the move to preserve nature from human use or to conserve nature (so that it can be used wisely for future availability or productivity) can be seen to be part of environmental stewardship. In other words, a moral imperative to protect and manage nature based on love for it is shared by many today across the entire political spectrum (Gingrich and Maple, 2007).

Natural Infrastructure – Could It Break Down?

The EPA believes that environmental stewardship is indispensable for becoming a more sustainable society (EPA, 2005). Toward this end, the EPA proposes that environmental stewardship can focus on the following natural resource systems: (a) air, (b) ecosystems, (c) energy, (d) land, (e) materials, and (f) water. Increasingly, however, the capability of humans to control environmental systems seems to be in question. For example, although plants and animals comprise part of nature, the atmosphere and weather systems are another part of nature. With increased awareness about global climate change (recorded temperatures across the Earth have increased 1 degree Fahrenheit over the last century), it seems that the planet might be on the verge of shifting to a new equilibrium with a higher overall temperature (Thorne, Ferrell, and Ferrell, 2008, p. 320). The propensity for this shift is likely being exacerbated by the greenhouse gases pumped into the atmosphere each day by humans and animals. Concentrations of carbon dioxide – an otherwise harmless gas that plants use in photosynthesis – are growing at a rate that plant life cannot adequately process. As a result, the blanket of greenhouse gases in the atmosphere is thickening with the effect that temperatures and weather are changing.

The specter of global climate change puts Teddy Roosevelt's words about the depletion of natural resources as the fundamental problem in a new light. Rather than caring for nature for aesthetic or moral reasons that may be optional to humans, the environment must be cared for because it actually serves as infrastructure for human civilization. Natural resource systems such as the six serving as the focus for environmental stewardship according to the EPA can be damaged beyond repair or degraded in their ability to provide service to humankind.

Stewart Brand, the founder and editor of the *Whole Earth Catalog* and an ecologist, calls himself an 'ecopragmatist' (Brand, 2009). Brand asserts that civilization requires a tranquil climate to prosper. In this way, the climate provides ecosystem services to humans. Brand makes the observation that modern humans are trained to overlook infrastructure. Humans seem to notice infrastructure only when it does not work. Brand states:

> There are some exceptions. People like the romanticism of railroads and admire bridges and ships. Small towns decorate their water towers. But working mines, containership ports, power plants, power lines, cell-phone towers, refineries, dumps, sewerage – all bear one sign: KEEP OUT. Those places are left to the workers, who are low-status. One might say exactly the same about ecosystem infrastructure, such as watersheds, wetlands, fisheries, soil, and climate. (p. 16)

Brand proposes that a deep bow of thanks is due to environmentalists who have been drawing attention to dangerous breakdowns of natural infrastructure and setting about the protection and restoration of it:

> A bridge is infrastructure, and so is the river under it. Both support our life, and both require maintenance, which has to be paid for somehow. Radio spectrum is infrastructure, and so is an intact ozone layer. Both support our life, and both require international agreements to avert a 'tragedy of the commons.' (p. 16).

Common Goods Dilemma

A common dilemma occurs when a shared resource is degraded or consumed for short-term gain by those sharing the resource, rather than managing the resource for the long-term benefit of all. Elinor Ostrom, the first woman to win the Nobel Prize in economics (in 2009) for her research about cooperative ownership, points out that a 'common' actually means that agreements or institutions are in place for the successful sharing of a common good. For example, farmers in some Swiss villages share a communal meadow to graze cows. No overgrazing occurs because there is a common agreement among villagers that no one is allowed to graze more cows than they can care for over the winter – a rule in effect since 1517 (Walljasper, 2010).

According to Ostrom, 'the commons' more accurately refers to the wide and diverse set of common-pool resources or common goods (such as forests, grazing lands, irrigation waters, and fisheries) and public goods (such as knowledge and national defense). So, what many refer to as a 'commons dilemma' would be better termed a 'common goods dilemma'.

Figure 9.1 depicts a typology of goods based on the excludability and rivalrousness of the goods (Varian, 1992). Excludability refers to whether some people can be excluded from using the good. The rivalrousness of goods is based on the degree to which the consumption of the good by one person reduces the availability of the good to others for similar consumption.

	Excludable	Nonexcludable
Rivalrous	**Private goods** food, clothes, autos, iPods	**Common goods (Common-pool resources)** grazing lands, forests, irrigation waters, fisheries
Nonrivalrous	**Club goods** movie theaters, private parks, satellite television	**Public goods** air, broadcast television, national defense

Figure 9.1 A typology of goods based on excludability and rivalrousness

Source: Varian (1992).

As shown in the upper-left quadrant of Figure 9.1, food for one person is a private good because it is excludable and rivalrous. It can be owned by one person, and when a person eats a lunch, it cannot be eaten by others. Common goods can be found in the upper-right quadrant of the matrix. Here, irrigation waters are shared by many farmers (making them nonexcludable), but they are rivalrous (because the consumption of any portion of the irrigation waters renders that portion unusable by other farmers). In the lower-left quadrant, club goods are those that are excludable and nonrivalrous. For example, tickets can be sold to a cinema screening of a movie (making the movie screening excludable), and many patrons can view the movie simultaneously without reducing the movie consumption of others (making the movie screening nonrivalrous). Finally, in the lower-right quadrant, public goods are those that are nonexcludable and nonrivalrous. The air we breathe is an example. The air is shared by all (making it nonexcludable), and one person's breathing does not reduce the amount another person can breathe (making it nonrivalrous).

Although the air we breathe is a public good, the atmosphere surrounding the Earth turns out to be a common good whose overuse by all humans can degrade the services it provides humankind. Specifically, the production of greenhouse gases by humans is increasing the heat-insulating property of the atmosphere. In this way, a dilemma concerning an important common-pool resource – the atmosphere – is now emerging because the infrastructure service of a tranquil climate provided by the atmosphere seems to be at risk of degradation (Cohen and Winn, 2007).

A Challenge Unprecedented in Scale and Scope

Because no country controls the atmosphere surrounding the planet, addressing global climate change effectively seems to be a challenge on a scale that humankind has never before faced. The Kyoto Protocol, signed by 192 countries in 1997, set binding limits for developed countries to reduce their greenhouse gas emissions (Friedman, 2008). According to the Kyoto Protocol, these developed countries (excluding the United States and Australia who did not sign the protocol) would reduce their overall CO_2 emissions from 2008 to 2012 by 20 percent (Lomborg, 2007). Carbon dioxide accounts for 80 percent of the world's emissions of global warming gases from human-made sources (Bradsher, 2006). Other gases from industrial processes, plus methane from landfills and coal mines, account for the rest of these emissions.

Although Kyoto's backers hailed it as a small first step, it is widely seen as mostly symbolic because the impact on rising global temperatures (even if the United States and Australia had signed the protocol and adhered to it) would be only slight in the face of surging development in Third World countries such as China and India.

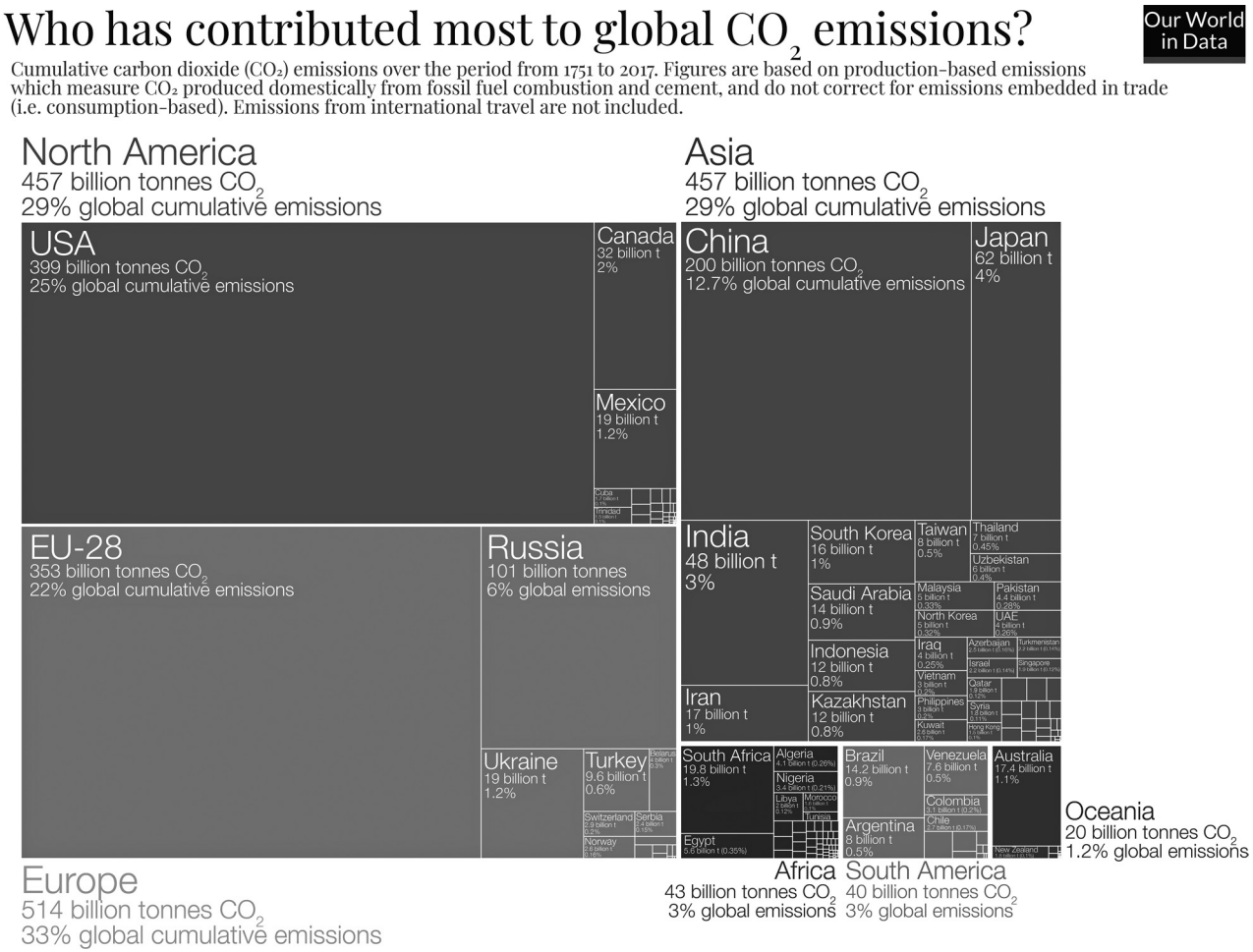


Figure 9.2 Cumulative CO_2 emissions since 1751

Source: Hannah Ritchie and Max Roser (2017) - 'CO_2 and Greenhouse Gas Emissions'. Published online at OurWorldInData.org. Retrieved from: https://ourworldindata.org/co2-and-other-greenhouse-gas-emissions

In 2006, when confronted with the forecast that China would overtake the United States in carbon emissions by 2009, the Chinese government's response was to blame the developed countries for their leading role in greenhouse gas emissions during the history of the Industrial Age. 'You cannot tell people who are struggling to earn enough to eat that they need to reduce their emissions,' said Lu Xuedu, the deputy director general of Chinese Office of Global Environmental Affairs (Bradsher, 2006). Xuedu's remark points to cumulative emissions since the beginning of the Industrial Age. As can be seen in Figure 9.2, the US has emitted the most over this period, followed by the EU and then by China.

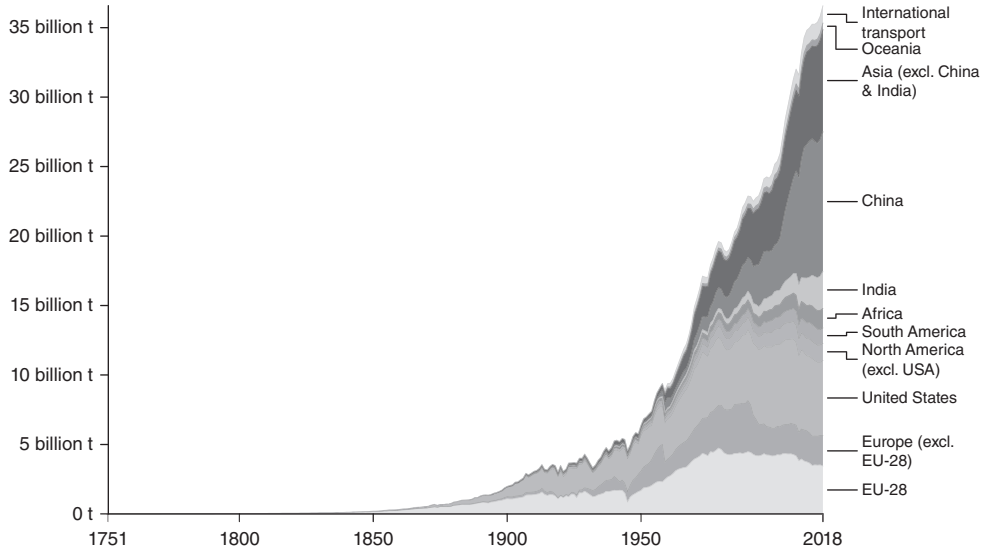
The Paris Agreement

The Paris Agreement (launched in 2016) is an agreement within the United Nations Framework convention on Climate Change as a global response to climate change. The goal for the Paris Agreement is to keep global temperatures from rising above 2 degrees Celsius – and if possible, below a 1.5 degree rise in temperature (UNFCC, 2020).

By February 2020, 189 of the 196 nations of the UN had become party to the Paris Agreement. In June 2017, US President Donald Trump announced that the US would withdraw from the agreement in November 2020 (BBC News, 2017). Despite this setback (reversed by the Biden administration in January 2021) to the collaborative effort of almost all of the world's countries, the Paris Agreement represents a milestone in global cooperation. While critics point out that the Paris Agreement has no binding enforcement mechanism and that major industrialized nations were not implementing policies to meet their pledged targets for emission reduction (Friedman, 2019), it represents a beginning for coordinated action across the world. In other words, the preliminary phase is over, so meaningful action can now become the focus of the world's countries.

The Trump Administration's announcement to withdraw the US from the Paris Agreement received special response from a number of US cities, states, businesses and universities. These entities in the US reaffirmed their commitment to helping the US reach its Paris Agreement goals despite President Trump's decision (America's Pledge, 2020). Twenty-four states formed the United States Climate Alliance to continue pursuit of goals related to the Paris Agreement (www.usclimatealliance.org/) (US Climate Alliance, 2020).

Figure 9.3 depicts the annual total carbon dioxide emissions by world region since 1751. As can be seen, CO_2 emissions began noticeably rising after 1950 until now. Europe and the US industrialized first among regions, so these regions became the leading emitters. However, with globalization's transfer of many factories to China, this country is now the leading emitter in the world. This trend is readily perceived by examining Figure 9.4 which depicts world fossil-based emissions since 1970. Here, China and other countries in Asia now rise to the lead positions in the graph for annual CO_2 emissions.



Source: Carbon Dioxide Information Analysis Center (CDIAC); Global Carbon Project (GCP)
Note: 'Statitistical differences' included in the GCP dataset is not included here.
OurWorldInData.org/co2-and-other-greenhouse-gas-emissions • CC BY

Figure 9.3 Annual total CO_2 emissions, by world region since 1751

Source: Hannah Ritchie and Max Roser (2017) - 'CO_2 and Greenhouse Gas Emissions'. Published online at OurWorldInData.org. Retrieved from: https://ourworldindata.org/co2-and-other-greenhouse-gas-emissions

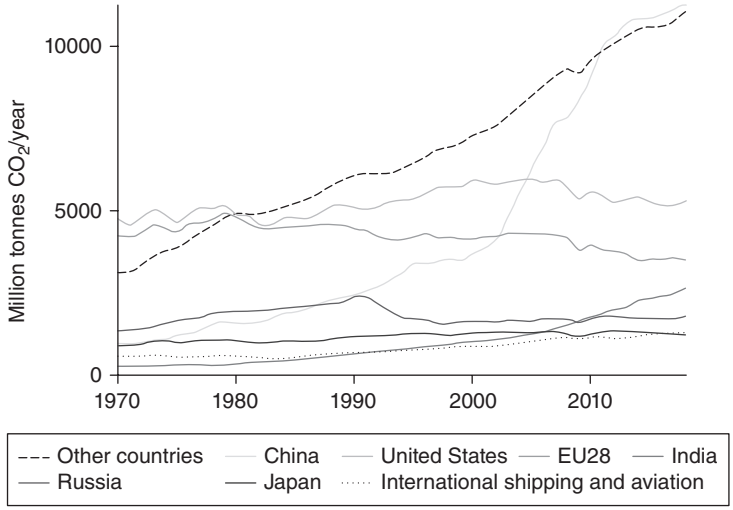


Figure 9.4 World fossil CO_2 emissions, 1970–2018

Source: Figure courtesy of Tomastvivlaren via Wikicommons. Shared under the CC BY-SA 4.0 license.

In sum, Figure 9.4 shows that the world now emits more than 35 billion tons of CO_2 into the atmosphere each year than in 1950. Industrialization accounts for much CO_2. Not surprisingly, countries in the EU and the US have seen their CO_2 emissions decline this century as their economies became service economies, while developing country giants with increased industrialization, such as China and India, have seen their CO_2 emissions climb. Figure 9.4 shows the only lines trending upwards are for Other Countries, China, and India).

In sum, the atmosphere could be regarded as a common good with rules for protecting its climate regulating properties, but because of the slow movement among governments to take action on this, a dilemma regarding this common-pool resource exists. The global average temperature in 2019 was 1.1 degrees Celsius above the long-term average (Carrington, 2020). In 2018, the UN's Intergovernmental Panel on Climate Change (IPCC) issued a report and press release stating that in order to have a good chance of limiting warming to 1.5 degrees Celsius from pre-industrial times, carbon emissions would need to decline 45 percent by 2030 (Shellenberger, 2020). 'The IPCC did not say the world would end, nor that civilization would collapse, if temperatures rose above 1.5 degrees Celsius,' environmentalist and opponent of climate alarmism Michael Shellenberger said (p. 4).

While the coronavirus lockdown imposed by many governments around the world resulted in a 25 percent drop in CO_2 emissions in April 2020, and a 30 percent drop in nitrous oxide (NO_2), researchers see that such a short-term reduction in greenhouse gas emissions would only result in global warming declining by just .01 degree Celsius by 2030. Instead, economy-wide changes across countries around the world would be needed for a zero-emissions economy. Such an economy could be realized by transitioning to vehicles and buildings that emit much less carbon by using renewable energy or hydrogen as fuels.

In a massive effort by more than 200 scientists named Project Drawdown to find the most impactful steps to reduce carbon emissions, refrigeration was decided on as the most impactful step (Hawken, 2017). This is because of hydrochlorofluorocarbons (HFCs) used as a refrigerant in many air-conditioning units. In terms of warming the atmosphere, HFCs have a warming effect 1,000 to 9,000 times that of CO_2. HFC substitutes are available (such as propane and ammonia), but with air-conditioning adoption soaring in developing countries, much work will need to be done for transitioning air-conditioning units being installed, as well as taking air-conditioning units out of service at the end of their lives. Ninety percent of refrigerant emissions happen at the end of the life of air-conditioning units.

Two of the top ten steps to reduce carbon emissions had to do with slowing population growth (which would result in less consumption). Educating girls and family planning were steps ranked sixth and seventh, respectively. The difference between a woman with no years of schooling and one with 12 years of schooling is more than four children (Hawken, 2017, p. 81). The investment in educating girls in developing countries is highly competitive with

other carbon reduction steps – and has the potential for an incalculable return on investment beyond carbon reduction.

Also, capturing and burying CO_2 using methods of carbon sequestration might contribute to meaningful reductions in emissions. However, such methods still need further development.

Public Sector Entrepreneurship to Reduce CO_2 Emissions

Carbon capture and storage (CCS) is an emerging technology that might allow the vast coal reserves of the planet to be used while reducing carbon dioxide emissions that would protect the climate (Pew Center on Global Climate Change, 2011). CCS involves separating the CO_2 from other gases emitted in the process of burning coal and liquefying the resulting gas. The liquefied CO_2 can be transported for several hundred miles and then injected deep underground, miles below the surface of the Earth, in suitable geological formations, deep underground saline aquifers, or disused oil fields (Jha, 2008). The last method is often used in a process called 'enhanced oil recovery', where CO_2 is pumped into an oil field to force out the remaining pockets of oil that would otherwise prove difficult to extract. The United States has the capacity for underground storage of current levels of domestic CO_2 emissions from its coal-fired electricity-generation plants for more than 300 years (Pew Center on Global Climate Change, 2011).

The US government's CCS efforts took an important step in April 2017 when the government's first industrial-scale CCS project in Decatur, Illinois (that received $141 million in government funds and $66.5 million from the private sector) began operations (Energy.gov, 2020). The CCS facility will capture and store 1 million tons of CO_2 each year generated from ethanol production at a nearby Archer Daniels Midland biofuels plant. The gas will be held 7,000 feet beneath the surface in the saline Mount Simon Sandstone formation that has the capacity to sequester all of the 250 million tons of CO_2 produced each year by industry in Illinois.

Some governments have begun carbon taxes to reduce carbon emissions into the atmosphere. A carbon tax is a form of pollution tax (C2ES, 2020). It levies a fee on how much carbon is emitted. Households and firms switching to renewable energy would pay no tax.

Sweden enacted a carbon tax in 1991 (Carbon Tax Center, 2020). However, the tax does not apply to electricity generation or biomass energy generation (widely used by Swedish households now) and industries pay only half of the tax. The government implemented the carbon tax gradually with the first taxes set at €23 per ton of CO_2 emissions, but went to €123 in 2019 (Schiebe, 2019). During the period from 1990 to 2017, the Swedish GDP increased 78 percent, while Sweden's greenhouse gas emissions declined 26 percent.

This suggests that imposing a carbon tax that is neutral (the proceeds from the tax reduce other taxes) will not impede economic growth for a country.

The World Bank estimates that less than five percent of emissions covered by carbon taxation is priced at a level that would achieve the goals of the Paris Agreement, such as at $40–80 per ton by 2020, or $50–90 per ton of CO_2 by 2030 (Schiebe, 2019). Australia's government set a low carbon tax of about $19.60 per ton of carbon between 2012 and 2014, and saw a drop in the country's carbon emissions. However, political winds shifted in 2014 and the Australian government repealed the tax.

Prospects for a Low-Carbon Future

In sum, government can entrepreneurially build demonstration projects to validate CCS technologies, but it seems more is needed or a tragedy of the commons will result as the atmosphere accumulates CO_2 and forecasted climate disruption accelerates in a non-linear manner (Shultz and Holbrook, 1999). Without the externality of greenhouse gas emissions being included in the price for energy, private firms do not find CCS to be financially viable with current technologies. Richard Jones, deputy executive director of the International Energy Agency (IEA), warned that with current polices, CCS will have a hard time being deployed.

British Columbia's Carbon Tax

Newer policies might focus on including the full cost of emitting carbon in market pricing with a carbon tax placed on CO_2 used in business operations. Despite the reluctance of national governments to raise any taxes in a time of economic uncertainty, the provincial government of British Columbia went ahead and imposed its own carbon tax of about C$10 per ton of CO_2 in 2008 that increased to C$30 per ton of CO_2 in 2012 (Marshall, 2011). (In 2020, one US dollar could buy 1.32 Canadian dollars and one Euro could buy 1.55 Canadian dollars.) The tax is revenue-neutral in that the government lowers the taxes of corporations and individuals at a rate comparable with the carbon tax they pay.

The carbon tax first required British Columbians to pay C$.18 more for a gallon of gasoline (Marshall, 2011). In July 2012, the next phase of the carbon tax required British Columbians to pay C$.27 more for a gallon of gasoline when the tax rises to C$30 a ton of CO_2-equivalent. Because 85 percent of British Columbia's electricity comes from hydropower, the tax has little effect on electricity users. Instead, most of tax is being paid by drivers and by businesses, as well as by individuals using natural gas, propane, or coal. The cost for other fuels, such

as natural gas or coal, varies by their carbon content. Combustion accounts for three fourths of the province's CO_2 emissions, and the tax applies to these. The rest of the province's emissions have other sources, such as methane seeping from landfills.

As a result of the carbon tax, public institutions have sought to include more energy-efficient technologies (Marshall, 2011). For example, in the Resort Municipality of Whistler, community manager Ted Battiston says the tax played a role in changing from propane tanks to solar panels and geothermal pumps in the heating unit of the local swimming pool. Heavy emitters of greenhouse gases, such as cement manufacturers, complain loudly about how imported cement is now threatening the vitality of their businesses. Alternatively, businesses with a small carbon footprint are not complaining much about the tax. This brings the heavy emitters to call for a different way of recycling the carbon-tax revenue. According to these heavy emitters, instead of the tax proceeds going to every business, more of the cash should help carbon-intensive companies improve their energy efficiency.

Those monitoring the effect of the carbon tax in British Columbia agree that it reduced consumption of gasoline, as well as overall emissions (Harrison, 2019). It did this with a stronger adoption of fuel-efficient vehicles. Importantly, job loss or harm to low-income households did not occur to any significant degree. However, because emissions lowered and then levelled off, it appears that a more sizeable carbon tax and other complementary measures will be needed to attain the desired reductions in emissions in the future.

So what does British Columbia's example mean for national governments? Paul Bledsoe, a senior adviser at the Bipartisan Policy Center, believes that a tax on energy is one of the few ways that the US government could obtain new sources of revenue if tax reform is done to reduce the federal deficit. One goal of reform would be to reduce taxes for corporations and individuals – exactly what a carbon or energy tax could finance.

'The enormous political appeal of cutting corporate and individual tax rates as part of debt reduction has the potential to more than offset the political push back on a consumption tax, at the right moment,' Bledsoe said (Marshall, 2011, p. 6).

EPA and Emissions Regulation

In April 2007, the US Supreme Court declared that Massachusetts had standing to bring a legal suit against the EPA for not regulating greenhouse gases – specifically CO_2 – emitted from automobile tailpipes. Previously, CO_2 had not been considered a 'pollutant' under the Clean Air Act. In a 5–4 decision, the Supreme Court asserted that Massachusetts faced harm that was both actual and imminent because of the risk of harm from costly storms and the loss of coastal shore that would result from climate change (Yergin, 2011, p. 502).

Some called the ruling the most important environmental ruling of all time. In addition to classifying CO_2 as a pollutant, it termed the EPA's current stance of nonregulation as being not in accordance with the law. If Congress did not legislate the regulation of carbon, the EPA was supposed to.

The EPA's subsequent move to regulate emissions from stationary sources, such as coal-fired electricity-generating plants, drew a backlash from Congress and more than a dozen states, such as Texas (Galbraith, 2010). It seems that the battle over CO_2 regulation will depend on the composition of the Congress in the coming years. The stance of Congress will also be crucial in determining whether an international regime for climate change emerges.

In addition to the opportunities businesses now recognize as accompanying concern about environmental issues, such as global climate change and loss of biodiversity, businesses have begun to realize that sustainable business practices can contribute to their increased competitiveness. Walmart is a case in point. In 2005, CEO Lee Scott declared that climate change was at the top of his list of environmental challenges that had to be addressed (Humes, 2011, p. 103). Air and water pollution, water shortages, destruction of critical habitats, and the reduction of biodiversity rounded out his list of environmental challenges. Later, Scott would testify before Congress twice in 2009 advocating for reduction of greenhouse gas emissions. In these ways and in a myriad of operational changes, Walmart began turning away from a ruthless approach to business that disregarded the environment and communities. Other businesses could no longer say that sustainable business practices were too risky if Walmart had adopted them. How strange could environmentally friendly business leaders be if Walmart now wanted a low-carbon future?

Walmart Sets Sail to Harness Winds of Change for Sustainable Business Practices

Rather than continuing to view corporate social responsibility as an ethical veneer to shield the firm from criticism in society, Walmart realized that the most sustainable business, the cleanest, and the least wasteful would gain a competitive advantage (Humes, 2011, p. 3). Costs would be lowered (meaning profits would likely rise accordingly), and customers would be pleased with better products and services (and other stakeholders would be pleased, as well). This advantage would not accrue in some abstract future time, but now – during the watch of the company's current leaders. Accepting this premise, then, led to understanding that the pivotal question facing this era of business would be not if business will obey the laws of nature but when and how and on whose terms? Would Walmart be an innovator and lead sustainability – thereby obtaining the valuable knowledge acquisition first-movers can

obtain – or would it wait for its competition, the courts, or Congress to bring compelling force for Walmart to do this?

Since 2005, Walmart has accepted that sustainable business practices represent a better way to do business (Humes, 2011). The firm turned away from ingrained thinking that such business practices meant extra costs, and instead, it saw these sustainable business practices as ways to eliminate waste and the costs that go with such waste. The firm had noticed the operational efficiencies obtained by Patagonia and Nike. Walmart had also struggled with persistent criticism of its operations.

Green Light for Sustainable Business Practices at Walmart

Although inspiring a movement among businesses to direct philanthropy toward organizations that defend or improve the natural environment is a major accomplishment by itself, Patagonia's most significant accomplishment to date might be winning over business leaders of firms that will never join 1 Percent for the Planet to recognize that industry and ecology are inherently connected. By working with one firm, Walmart, Chouinard might more favorably impact the marketplace than in any other way.

Chouinard has visited Walmart's headquarters in Bentonville, Arkansas, to explain the operating principles of Patagonia to Walmart's leaders, as well as to a gathering of 1,200 buyers for Walmart (Ridgeway, 2010). Chouinard told the audience to lead 'an examined life' so you know the consequences of your actions, and once you know them 'clean up your act' (Ridgeway, 2010, p. 44). Afterward, Walmart CEO Lee Scott went to the podium with his closing remarks:

'There's a third of you out there who know what we're doing and why we're doing it,' Scott said. 'There's another third who don't quite understand but you're getting there. And there's a final third telling yourselves this isn't the company that Sam Walton founded, and you don't understand and you may not be willing to learn. In the future, there may not be a place for you at Walmart' (Ridgeway, 2010, p. 44).

'The revolution really has started,' Chouinard later remarked about his work with Walmart. 'I'm blown away by Walmart. If Walmart does one-tenth of what they say they are going to do, it will be incredible' (Casey, 2007, p. 5).

By 2017, Walmart's efforts for adopting renewable energy, eliminating waste and selling products that sustain the environment had matured to the point where the financial return of these efforts became undeniable (Henderson, 2020). For example, Walmart had met its goal of doubling the transportation fleet's efficiency (which logs more than 700 million miles per year in North America) and was saving more than $1 billion a year – about four percent of its annual profit. Observers estimate that Walmart saves more than $250 million each year from the increased energy efficiency of its more than 11,000 stores in 28 countries.

In 2017, Walmart launched Project Gigaton to remove 1 billion metric tons of greenhouse gas emissions from the global value chain by 2030 (Stevens, 2019). That would be like taking 212 million cars off highways for one year (Fialka, 2019). More than 5,000 suppliers of Walmart joined the effort. Unlike government regulations which stop at national borders, the effects of Project Gigaton cascaded across international borders.

For example, Procter & Gamble reformulated the Tide detergent brand to clean well in cold water and then initiated a new ad campaign focused on consumers making the switch to cold water washing. InBev's Anheuser-Busch built a massive wind farm in Oklahoma that can provide enough electricity to produce all of the beer the firm brews in the US. Kellogg set a goal of training half a million US farmers in techniques to lower greenhouse gas emissions. Additionally, Unilever attained the milestone of having half of its plastic packaging derived from post-consumer recycled materials.

'The Index'

The first step in this project to develop 'The Index' was to notify Walmart's suppliers of its intentions (and what this would mean for them). Accordingly, the firm sent a letter to its suppliers in 2009 posing 15 questions to them about their own processes and operations (Walmart, 2011). These are depicted in Figure 9.5. Today, Walmart has named its program for evaluating suppliers on the Sustainability Index as the Sustainability Insight System (THESIS).

The second step in developing The Index was the formation of an independently governed Sustainability Consortium that would construct the product database – the essential ingredient to The Index. Duke intended this product database to be open, composed from many sources, reviewed by peers, and carrying no hype for brands included in the database (Humes, 2011, p. 192).

Today, the Sustainability Consortium (TSC) identifies the environmental and social issues that matter in meaningful ways to sustainability for Walmart (Walmart, 2020). TSC analyzes information across a product's life cycle (from sourcing, manufacturing, transporting, selling, customer usage, and end of use) and identifies 'hot spots' for improvement. Key performance indicators (KPIs) are developed in the form of survey questions used to measure sustainability performance for a product category. Suppliers respond to 15 questions on surveys about each product category they supply to Walmart. Walmart then shares opportunities for special attention by the supplier.

Founding members of this consortium included the green household cleaning products company Seventh Generation; agribusiness giants Monsanto, Cargill, and Tyson Foods; cleaning products company Clorox; Dairy Management, Inc.; Waste Management; Disney; SC Johnson; Procter & Gamble; PepsiCo; computer manufacturers Hewlett-Packard and

Dell; and a dozen others. Walmart competitors, Best Buy and Safeway, joined after a few months. Despite the lower rate for nonprofits ($10,000 compared to $100,000 for firms), only one joined – the environmental group World Wildlife Fund. By 2020, others had joined, such as Arizona State University, Cornell University, the University of Arkansas, the Nature Conservancy, and Green Seal which certifies products as having the highest standards for health and environmental leadership (Sustainability Consortium, 2020).

	Sustainability Supplier Assessment questions
Energy and climate Reduce energy costs and greenhouse emissions	1. Have you measured and taken steps to reduce your corporate greenhouse gas emissions? (Y/N)
	2. Have you opted to report your greenhouse gas emissions and climate change strategy to the Carbon Disclosure Project (CDP)? (Y/N)
	3. What are your total annual greenhouse gas emissions in the most recent year measured? (Enter total metric tons CO_2e, e.g. CDP 2009 Questionnaire, Questions 7–11 Scope 1 and 2 emissions)
	4. Have you set publicly available greenhouse gas reduction targets? If yes, what are those targets? (Enter total metric tons and target date, e.g. CDP 2009 Questionnaire, Question 23)
Material efficiency Reduce waste and enhance quality	Scores will be automatically calculated based on participation in the Packaging Scorecard in addition to the following:
	5. If measured, please report total amount of solid waste generated from the facilities that produce your products for Walmart for the most recent year measured. (Enter total lbs)
	6. Have you set publicly available solid waste reduction targets? If yes, what are those targets? (Enter total lbs and target date)
	7. If measured, please report total water use from the facilities that produce your product(s) for Walmart for the most recent year measured. (Enter total gallons)
	8. Have you set publically available water use reduction targets? If yes, what are those targets? (Enter total gallons and target date)
Nature and resources High-quality, responsibly sourced raw materials	9. Have you established publicly available sustainability purchasing guidelines for your direct suppliers that address issues such as environmental compliance, employment practices, and product/ingredient safety? (Y/N)
	10. Have you obtained third party certifications for any of the products that you sell to Walmart? If so, from the list of certifications below, please select those for which any of your products are, or utilize materials that are, currently certified.
People and community Vibrant, productive workplaces and communities	11. Do you know the location of 100% of the facilities that produce your product(s)? (Y/N)
	12. Before beginning a business relationship with a manufacturing facility, do you evaluate their quality of production and capacity for production? (Y/N)

	Sustainability Supplier Assessment questions
	13. Do you have a process for managing social compliance at the manufacturing level? (Y/N)
	14. Do you work with your supply base to resolve issues found during social compliance evaluations and also document specific corrections and improvements? (Y/N)
	15. Do you invest in community development activities in the markets you source from and/or operate within? (Y/N)

Figure 9.5 Fifteen questions Walmart proposed to its suppliers as part of its Supplier Sustainability Assessment

Source: Walmart. Supplier Sustainability Assessment. Page 4 of 32. www.walmartstores.com/download/4055.pdf

By 2019, the Sustainability Index included data from suppliers on important environmental, social, and other performance indicators (Walmart, 2019). The Index reflects responses from more than 1,500 suppliers across 115 product categories in Walmart and Sam's Club in the US. More than 80 percent of goods in Walmart stores come from participating suppliers (who have improved their Sustainability Index scores by 28 percent in 2018 compared to 2016 scores).

The third step for The Index would be the creation of the tags and apps that would allow The Index to be readily used by consumers in their shopping. Upon the formation of the consortium, not every firm in the consortium wanted a big red tag for nonsustainability attached to their products in stores, so the idea of a red (not sustainable) or green tag (sustainable) for products did not initially receive unanimous support within the consortium (Humes, 2011, p. 194). By comparison, other firms in the consortium felt confident that they would receive favorable ratings for sustainability and wanted to have their sustainability scores known by the public as soon as possible.

By 2020, this step remains undeveloped by Walmart and the Sustainability Consortium. No mention of such tags or a mobile app is made in Walmart's 2019 Environment, Social and Governance Report. Likewise, no mention of tags or such a mobile app is included on the Sustainability Consortium's website.

Consumer Product Guides to the Rescue?

Despite the challenges Walmart has encountered in developing The Index, a nonprofit GoodGuide made inroads on offering credible sustainability ratings for products on three dimensions: (a) health, (b) the environment, and (c) society (labor and human rights). The company founded in 2007 by Dara O'Rourke, a supply-chain expert and professor at the University of California – Berkeley, rated more than 500,000 consumer items on these three dimensions on a scale from 1 to 10. GoodGuide also offered a mobile app that allows the user

to swipe a product's bar code at the store to receive GoodGuide's rating. Despite serving more than 10 million users in its history, GoodGuide paused its work in June 2020.

Time will tell if a consumer-oriented product rating service like GoodGuide will reappear. The enormity of tracking hundreds of thousands of stock keeping units (SKUs) and continually evaluating them on valid dimensions in a reliable way proves to be daunting. However, business solutions offered by new entrepreneurial firms offering trustworthy ratings of products on sustainability dimensions should not be ruled out in the future.

In the UK, Ethical Consumer is a leading consumer organization that has been researching and evaluating the social and environmental records of firms since 1989 (Ethical Consumer, 2020a). Consumers can search the ethical ratings of more than 40,000 firms and brands at www.ethicalconsumer.org.

One category covered by Ethical Consumer is fashion and clothing. Figure 9.6 depicts the final ratings of designer clothing brands. Consumers can read about what to buy (recycled clothing, organic, people before profits), as well as what not to buy (fur, leather, viscose), best buys (none recommended for designer clothing because of the poor scores) and what firms to avoid (such as Chanel, Louis Vuitton, and Prada among others). Consumers who pay a subscription fee can read more detail about how the firms faired on dimensions, such as (1) environment, (2) people, (3) animals, and (4) politics.

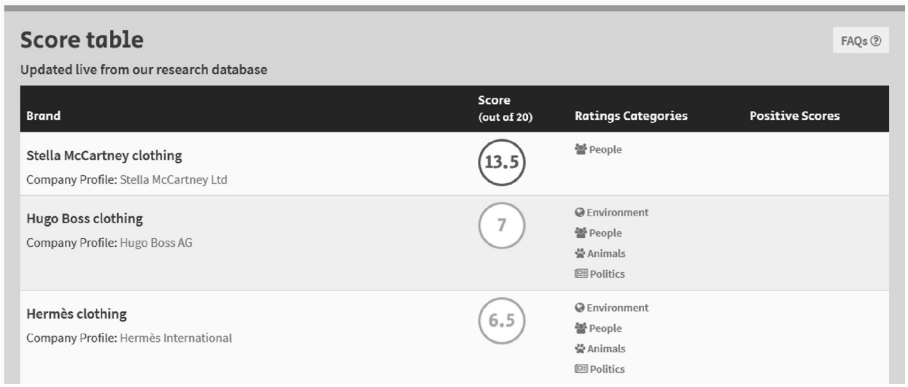


Figure 9.6 Ethical consumers' ratings of designer clothing brands

Source: Ethical Consumer (2020b).

Measuring a Product's Carbon Footprint

A product's carbon footprint represents the amount of carbon dioxide and other greenhouse gases that are emitted into the atmosphere when products are made, shipped, stored, and

then used by consumers. According to Nic Marks, founder of the New Economic Foundation's Center for Well-Being based in London, the introduction of the carbon footprint concept has been the most important development in recent years for the environmental movement (Marks, 2007, personal communication). Calculators for business and individual carbon footprints are now easily accessible at websites such as www.carbonfoot-print.com. By using such calculators, citizens can understand their own possible contribution to global climate change. In this way, carbon emissions are no longer clear, odorless, and tasteless; instead they take on a more concrete form in the minds of individuals. With such measurement comes responsibility and accountability, where before there was none or very little.

However, it turns out that measuring a product's carbon footprint requires a standardized approach that still needs to be refined. For example, when carbon footprint measurement began, firms focused on the product ingredients. But this told little about upstream processing (before the manufacturer received the inputs used in manufacturing), as well as about downstream activities (such as shipping of the product and the use and disposal of the product by consumers). In sum, a product's carbon footprint often depends on the breadth of the lens used to compute the carbon footprint. For example, the biggest contributor to a laundry detergent's carbon footprint is the clothes dryer – a downstream process not directly related to the ingredients of the detergent (Ball, 2008). With this in mind, it is easier to understand that the simplest way to cut carbon emissions may be to use less of a product, or to use it in a way that is less convenient – such as washing one's clothes by hand. Drying laundry outside on a clothes line will result in 4.4 pounds less carbon dioxide per load being emitted into the atmosphere.

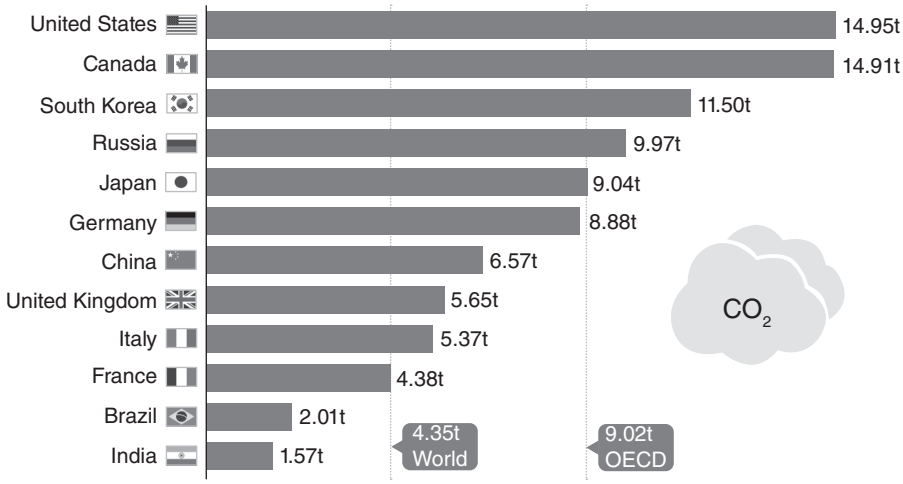


Figure 9.7 CO_2 emissions per capita among the world's largest economies in 2016

Source: Richter (2019). Shared under the CC BY-ND license by Statista.

As can be seen in Figure 9.7 the average person in the United States is responsible for the emission of 79.5 pounds of carbon dioxide each day (Richter, 2019). This is equal to 14.95 metric tons per year. This leads the world, but Canada is a close second. The simplest statistic about the carbon footprint is that for every mile a car drives, it emits about one pound of carbon dioxide. The average car in the United States emits five tons of carbon dioxide every year.

But as firms calculated the carbon footprints of their products, they discovered some amazing things. For example, Stonyfield Farm, the leading US producer of organic yogurt and a major supplier to Walmart, believed that energy used in making the yogurt was the biggest piece of the carbon footprint for its yogurt (Humes, 2011, p. 194). Stonyfield's leaders were stunned to learn that energy was a distant fourth in determining the size of its carbon footprint. The milk used to make the yogurt was first, followed by packaging and distribution. Stonyfield's leaders learned that cows burp regularly to digest their food (moving it across four stomachs). With these burps, the cows emit methane – a greenhouse gas. Methane gas is 25 times more harmful as a greenhouse gas than carbon dioxide. As a result, a cow's carbon footprint is 80 percent of a car's (Ball, 2008). This means that in terms of contribution to global climate change, a cattle herd represents a fleet of cars about 80 percent the size of the number of cows in the herd.

To bring firms to a common approach for measuring the carbon footprints of their products, the International Standards Organization (ISO) issued guidance in ISO 14064-1 in Spring 2006; companies around the world are now using it and the related GHG (greenhouse gas) Protocol to calculate emissions consistently (Carbon Clear, 2009). Firms announcing their carbon footprint should be following these guidelines or major pieces of their carbon footprint will be ignored.

CONCLUSION

This chapter began by posing the following question: 'Is it possible to use business for the benefit of the environment?' A review of Yvon Chouinard's outdoor clothing company Patagonia highlighted how the firm has not only directed millions of dollars to nonprofits supporting environmental conservation and activism, but also it has inspired legions of customers and other businesses to pursue more environmentally friendly ways to conduct their affairs.

For 'no-growth' proponents of macromarketing's critical school, the reality of operating a business remains unpalatable. Chouinard once told an audience of Walmart employees that if a company were going to make anything, it had to acknowledge that it would damage the world (Humes, 2011, p. 204). For those who focus on the environment as the prime source of value for human living, Chouinard's words mean that business in its current form and with its objective

of growth is an enemy of the environment. In this view, the atmosphere would be regarded as a public good, that no one human or one business has the right to appropriate for its own purposes. Alternatively, for the 'some-growth' proponents of macromarketing's developmental school, managing the environment is acceptable. In this view, the atmosphere would be regarded as a common good – if humans could just agree on the rules for managing it as a common good.

In sum, it seems that although it is not possible to conduct business without changing the environment, it is possible to conduct business so that the environment benefits. In other words, business can be done not just in an eco-efficient way (doing less bad) but also in an eco-effective way (that replenishes, restores, and nourishes the rest of the world) (McDonough and Braungart, 2002). However, businesses are now developing more sustainable products and business practices that would be termed eco-effective – and some of these will be presented in the next chapter.

With the population of the world expected to grow from 7 billion today to 9 billion by 2050 (it is forecast to decline slowly after this), firms like Walmart will be poised to engage many more customers around the world. However, Walmart CEO Duke explains, '[I]f our environmental demands continue at the same rate, we will need the equivalent of two planets to maintain our standard of living in another 25 years' (Keegan, 2011, p. 134). With this in mind, the solution offered by the critical school of macromarketing that calls for less consumption seems to be an important element in future approaches to doing business in a way that benefits the environment. In short, demarketing consumption will likely be a social marketing effort that will take a broad and enduring effort to make it cool to consume less in the future.

QUESTIONS

- In what ways does Patagonia benefit the environment?
- To what extent can other firms benefit the environment like Patagonia?
- Is the atmosphere that surrounds the Earth a public good, a common good, or something else? What might it become in the future at some time?
- What role do you envision governments taking with regard to global climate change in the future? Explain. What would it take for government to take a different role than the one you envision?
- Compare and contrast the environmental stewardship of Patagonia and Walmart.
- What is the most surprising question to you that Walmart asks of its suppliers in its Sustainability Supplier Assessment Questions featured in Figure 9.6?
- Using a 1 to 10 scale with '1' representing 'enemy of the environment' and 10 representing 'replenishing and restoring the environment,' how would you rate Patagonia? Walmart? How would you expect to rate them in 10 years? What does this mean for society and societies?

Mavericks Who Made It

Jim Neiman

Source: Federal Reserve Bank of Kansas City (2020).

In 1906, President Theodore Roosevelt established Devils Tower – a flat-topped tower of gray, igneous rock rising more than 280 meters above the surrounding forest and grasslands of the Black Hills in far-northeastern Wyoming – as the first national monument protected area in the United States (National Park Service, 2011). About six miles from Devil's Tower, in the exposed-red clay hillsides of the Black Hills, lies Hulett, Wyoming (population 500) – headquarters for Neiman Enterprises, Inc. (NEI).

Jim Neiman's grandfather, A. C. Neiman, built a saw mill in the Black Hills to process Ponderosa pine timber. Today, NEI owns the last saw mill operating in Wyoming, three other mills 60 miles from Hulett in the South Dakota Black Hills, and Montrose Forest Products in western Colorado (Mimiaga, 2018).

In 2000, Neiman decided to integrate sustainable business practices into the operations of the firm he inherited from his father. Rather than force his firm to embrace these sustainable business practices rapidly and earn the Sustainable Forestry Initiative's (SFI) certification, Neiman chose to educate his employees and allow them to embrace the principles of sustainability over a ten-year period. He wanted a more sustainable approach to business baked into the culture of his firm. In 2010, Neiman Enterprises operations received SFI certification. Neiman commented:

> It took time so people could buy into it. It was about culture change. It was about bringing them along, rather than ruling by edict. We wanted to pass decision-making to the lowest level, so the new philosophy of the company would actually permeate the culture.
>
> (Neiman, 2011, personal communication)

The SFI promotes sustainable forest management, and certification indicates the firm sources its wood fiber legally from noncontroversial forests. Certification also indicates the firm employs sustainable forestry practices to protect water quality, biodiversity, wildlife habitat, species at risk, and Forests with Exceptional Conservation (SFI, 2011). The firm's employees, as well as independent contractors working for the firm, must be trained in sustainable forestry practices. In short, SFI-certified forest-products companies value the long-term productivity and health of forests. This includes soil productivity and protection from wildfire, insects, disease, and invasive plants and animals.

Neiman explains:

> Certification is expensive. I spend between $150,000 to $250,000 per year to accomplish all that certification requires and I don't get a penny back. Our employees ask 'why are you doing this when you don't get any financial incentive?' My answer is that you have to believe in it. I want to have the right thing done on the ground – not just doing what a customer might want.
>
> (Neiman, 2011, personal communication)

Rather than tightly focusing on delivering the grades of wood that a customer at Home Depot might want when they want it, Neiman wants his 600 employees and 300 contract workers to follow the firm's sustainability philosophy whose first principle is integrity.

'How do you really get the right thing done out there where our people work?' Neiman asked:

> It means convincing 28 logging crews who are independent, 75 logging truckers who are independent, that they have to follow our philosophy. For example, in the Spring the ground is wet, and we might be almost out of logs in the mill. Yet, somebody wants to pull out a truck and go out on the wet ground to retrieve some logs in the forest. But our philosophy would say it is of a higher importance to run out of logs in the mill, rather than risk our equipment and people in precarious situations in the forest, then. You'd be surprised how employees can be more forward-thinking before Spring and figure out how to put more logs down in retrievable places.
>
> (Neiman, 2011, personal communication)

Jim Neiman's story illustrates some of the complexity and controversy that comes with working in an industry so deeply involved with the environment. Integrating sustainable business practices into his firm took time and still requires hundreds of thousands of dollars each year to maintain. Neiman consults regularly with foresters, and he serves on four land-use planning boards at the local, Black Hills, regional, and national levels.

'Sustainability – it goes way deep,' Neiman said. 'How do you sustain the family business? How do you keep the community healthy?'

Questions

- Why did Neiman choose to take the slow approach in obtaining certification by the Sustainable Forest Initiative?
- What are the costs to Neiman for pursuing sustainability at Neiman Enterprises? In the community?
- How would those from macromarketing's critical school assess Neiman's performance in sustainability? How would those from macromarketing's developmental school make the same assessment?
- What does Neiman's story say about living one's life with an environmental-orientation in a rural community, as opposed to a suburban locale or a city?

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