

1.3: Environmental Impact

The second dimension of a sustainable business is its contribution to preserving environmental quality; commonly referred to as **environmental impact**. Numerous examples exist of companies reducing environmental costs while simultaneously improving company performance and profitability. The environmental impact of a business's operations is viewed both internally and externally. The business that focuses exclusively on its environmental impact, rather than focusing on the triple bottom line emphasis of a sustainable business, is referred to as a green business.

Internally, the environmental impact of a business often refers to practices related to use of natural resources, waste, toxicity, and pollution. For manufacturing companies, the environmental impact can be large and efforts are generally made to reduce waste, toxicity, and pollution within the manufacturing process. International Organization for Standardization (ISO) 14000 is one example of guidelines for firms on environmental practices and reduced impact.

For service companies, the environmental impact is smaller but should not be overlooked. Consider, for example, the amount of waste the company pays to have removed; chemicals used that eventually find their way into the air, water, or ground (such as cleaning compounds, fertilizers, weed killers, and many others); and pollution created by energy usage, employee commutes, or business travel.

Green building (or remodeling) is a fast growing trend among businesses that wish to be more sustainable. Green building refers to the reduction of environmental impact in the design, construction, and ongoing life of the building. The most frequently utilized standards for green building are the Leadership in Energy and Environmental Design (LEED) of the U.S. Green Building Council.

Recycling programs are often part of a sustainable business's efforts to reduce waste and toxicity. Sustainable companies consider both the purchase of recycled items for office supplies, furniture, and other needs, as well as recycling or donating its own unwanted items. While most companies or offices may already recycle paper, aluminum cans, and plastic bottles, there is little that cannot be recycled today. For example, clever artists and designers make purses and handbags from recycled soda pop tabs, newspapers, tires, potato chip bags, barcodes, candy wrappers, juice pouches, rice bags, and more. As another example of recycling, Caracalla, a salon and day spa in Little Rock, Arkansas, recycles cut hair by sending it to the nonprofit Matter of Trust to be woven into hair mats capable of absorbing chemical oil spills. Many restaurants recycle used grease through companies that purchase "yellow grease." Companies can also recycle office furniture and equipment through donations to charitable giving programs at schools and other nonprofits. Numerous options exist to recycle or donate electronics. If you cannot find a suitable place to recycle or donate your company's unwanted items, consider turning to The Freecycle Network, an online site to give away unwanted items. Many organizations, such as the Zero Waste Alliance, help businesses minimize waste and toxicity. Before discarding anything, the sustainable business will exhaust all possibilities in identifying a second life for the product.

Externally, the sustainable business also considers the environmental impact of suppliers in terms of services and products as well as transportation of goods. A sustainable business will seek out suppliers of services and products that are environmentally friendly. This results in the purchase of products that produce less waste, are less toxic, and generated the least amount of pollution in manufacturing and transportation. Sustainable businesses opt for local suppliers, when possible, in order to reduce the environmental impact caused through the transportation of goods.

Additionally, many sustainable businesses create a green procurement policy, or environmentally preferred purchasing policy, as an integral part of their operations to give preferential purchasing to products and services that are most environmentally friendly. An environmentally preferred purchasing policy would cover all types of products and services purchased by the organization. For example, this policy would give preference to green cleaning products that are less harmful to employees and the environment; or preference to Forest Stewardship Council (FSC) certified wood products that come from sustainably managed forests. As with other attempts to reduce environmental impact, a move toward green procurement can offer cost savings for the sustainable business. For example, Little Rock Athletic Club discovered that if it made the switch to recycled copy paper, the company could achieve a 10% cost savings, 13% fewer carbon dioxide emissions, and 35% fewer trees used when compared to the previous paper products. See [Note 2.6 "Tips to Green Your Office"](#) for more tips on how to green your office.

Tips to Green Your Office

Here are some steps that your office can take to reduce your environmental impact (and save money!):

1. Use e-mail instead of paper.
2. Print and copy on both sides of the paper.

3. Buy recycled paper with the highest percentage of recycled content.
4. Use environmentally friendly cleaning supplies and detergents.
5. Purchase refillable office products (cartridges, pens, etc.).
6. Unplug items not in use or not used frequently.
7. Switch to a green hosting service for your Web site.
8. Report and repair water drips and leaks immediately.
9. Start a vanpool or carpool program.
10. Create a green team to continue the work toward greening your office or workplace.

There are two additional considerations in determining a company (and supplier's) environmental impact: water efficiency and energy efficiency. When a sustainable business considers water usage—often referred to as a water footprint—it is seeking ways to become more efficient by reducing its use of fresh water or increasing its recycle rate for water. For example, some businesses have collected water from sink, water fountain, shower, dishwasher, and washing machine drains (collectively referred to as greywater systems) or installed rainwater collection systems to recycle water for use in landscaping, decorative water features, and to flush toilets.

When a sustainable business considers energy usage (often referred to as a carbon footprint or energy audit), it is seeking ways to become more efficient and reduce its energy usage. Through an energy audit, many companies have identified sources of wasted energy and accompanying opportunities to become more energy efficient. For example, in the past, landfills often burned off methane generated from decaying waste. Technologies now allow landfills to cap the methane and use it as a renewable energy source.

The generation and consumption of electricity creates emissions of carbon dioxide (CO₂), or carbon emissions. Within industrialized countries, a business emits a significant amount of carbon emissions. CO₂ is one type of **greenhouse gas (GHG)** that contributes to **climate change** (for an objective source of scientific information related to climate change, please visit the Web site of the 2007 Nobel Peace Prize winner, Intergovernmental Panel on Climate Change: www.ipcc-wg2.org). All other types of greenhouse gases are measured in their CO₂ equivalents; thus reference to carbon is the standard metric. As a result of the large energy usage and subsequently large carbon emissions (or carbon footprints), many businesses are actively engaged in finding ways to reduce carbon emissions by becoming more energy efficient.

The reduction of **carbon emissions**, or a reduction of the business's carbon footprint, is particularly appealing to businesses today partly because of the possibility of a future carbon tax and the growing carbon trade market (see Chapter 4). A carbon tax is enacted and regulated by the government and would add a tax to businesses based on the amount of carbon they emit in their daily operations. A carbon emissions trading system allows businesses to trade “credits” for carbon emissions. Emissions trading, sometimes referred to as a cap-and-trade system, is enacted and regulated by the government, which determines a maximum amount (or cap) of carbon emissions permitted by businesses. Businesses with emissions in excess of the cap will be required to purchase carbon credits (or carbon allowances) from businesses with emissions less than the cap and that have excess carbon credits to sell. There are already several cap-and-trade systems in place.

European Union Emissions Trading Scheme. The European Union has had a mandatory cap-and-trade system since 2005, the European Union Emissions Trading Scheme. It is the largest multinational, multisector system in the world.

New South Wales Greenhouse Gas Reduction Scheme. The New South Wales Greenhouse Gas Reduction Scheme began in 2003 and is a voluntary regional initiative in Australia. The prime minister of Australia will be expanding this system into a mandatory national market by 2010. New mandatory systems are also being considered by leaders in Japan and Canada.

New Zealand Emissions Trading Scheme. The New Zealand Emissions Trading Scheme began in 2009. The scheme is an important component of the country's goal to be carbon neutral by 2020.

Kyoto Protocol. The Kyoto Protocol is a voluntary multinational, multisector cap-and-trade system. According to the cap-and-trade system, companies from 39 Kyoto Protocol participating industrial nations have a cap on the amount of greenhouse gases to be emitted. Companies are issued carbon permits for their portion of the allocated emissions. The system also allows for emissions trading between member countries. Under the Protocol, industrialized nations can earn emissions credits (or carbon credits) for investing in clean technology projects in emerging economies.

In the United States, the only industrialized country in the world that has not ratified the Kyoto Protocol, there is an emerging infrastructure of voluntary cap-and-trade systems and emissions trading markets. These have arisen in response to the growing awareness of the impact of business activities on the environment as well as in anticipation of a forthcoming mandatory system.

For example, as part of the solution to global warming, U.S. President Barack Obama supports the creation of a market value in ecosystem sustainability. Obama for America (2007). His plan would put forth a goal to reduce carbon emissions to 80% below 1990 levels by 2050, although there is no current mandatory mechanism in place to support or enforce this goal.

Chicago Climate Exchange. The Chicago Climate Exchange (CCX) is the most well-established North American voluntary cap-and-trade program. Although voluntary, the CCX becomes legally binding and provides third-party independent verification. The CCX also trades carbon futures through the Chicago Climate Futures Exchange.

Regional Greenhouse Gas Initiative. The Regional Greenhouse Gas Initiative (RGGI) is the first regional mandatory system in the United States. The initiative is administered by 10 Northeastern and Mid-Atlantic states to cap emissions and trade carbon permits. Rather than allocating carbon permits to businesses for free, the RGGI held its first auction of permits in September 2008 and raised \$39 million to allow the participating states to invest in energy efficiency and renewable energy technologies. Gardner (2008). RGGI futures are traded on the Chicago Climate Futures Exchange as part of New York Mercantile Exchange's new Green Exchange.

Western Climate Initiative. The Western Climate Initiative is an initiative of several Western states and Canadian provinces. Although this partnership initiative was created in 2007, a cap-and-trade system is being explored but has not yet been implemented.

Midwestern Greenhouse Gas Reduction Accord. The Midwestern Greenhouse Gas Reduction Accord is an initiative of many Midwestern states and the Canadian province of Manitoba. It is a joint agreement established in 2007 to make efforts to reduce greenhouse gas emissions, although no cap-and-trade system is in place.

At this time, reduction of carbon emissions is voluntary in the United States and none of the aforementioned cap-and-trade systems is binding for U.S. businesses. Nonetheless, as mentioned, the possibility of mandatory carbon reductions has led businesses to analyze energy usage and carbon emissions and seek ways to reduce usage and emissions.

The first step to becoming more energy efficient is to conduct an **energy audit** (of the company's energy usage) or **carbon footprint analysis** (of the company's full range of operations) to gather baseline data reflecting current energy usage and subsequent carbon emissions from operations. The business can determine the scope of the analysis to be conducted. In a carbon footprint analysis, Scope 1 emissions will measure the direct emissions from energy created on-site through facilities owned by the company. Scope 2 emissions will measure the indirect emissions that result from the company's purchase of off-site energy through facilities it does not own. Scope 3 emissions will measure other indirect emissions from sources the company does not own and which are created through business activities required to keep the physical facility in operation, such as employee and customer commutes. Scope 3 emissions also consider indirect emissions throughout the company's supply chain as a result of the purchase of services and goods required for the business.

The analysis will help the business pinpoint areas in which energy usage and carbon emissions are high. Depending on the scope of the analysis, businesses often find that the carbon footprint is highest in the areas of energy consumption, waste, and travel and transportation. The business will then explore alternatives for reducing energy usage and reducing its carbon emissions. Within the area of energy consumption, companies may invest in energy efficiency improvements or purchase (or generate its own) energy from renewable sources (as detailed below in the discussion of renewable energy projects). Within the area of waste, companies will actively seek ways to reduce their own waste as well as purchase supplies with minimal packaging. Within the area of travel and transportation, the sustainable business will encourage the use of public transportation, telecommuting, ride sharing, flexible work schedules, and fuel-efficient cars for employees. Additional considerations are environmentally friendly alternatives for product and supply transport, such as increased fleet efficiency, the use of second-generation biofuels (or fuel created from waste), and local sourcing to reduce the number of miles products and supplies travel to reach their final destination.

Once the company has explored alternatives for carbon emissions reductions, the company will develop a plan for reducing energy usage and carbon emissions. The **carbon reduction strategy** (sometimes referred to as a climate change strategy, climate mitigation strategy, or climate abatement strategy) is a detailed plan of measurable specific goals with specific actions that will be taken and deadlines for achievement. Progress is then measured regularly (often annually or biannually) to determine progress toward the goals of reduced energy usage and carbon emissions.

After a business has done all it can to become energy efficient, it often seeks to compensate for the remaining unavoidable carbon emissions it is creating through its operations. This step is important in the plan if the business's goal is to become carbon neutral (sometimes referred to as zero carbon emissions), which is the elimination of all negative environmental impacts from carbon emissions created through the business's operations. To become carbon neutral and achieve zero carbon emissions, a business may

purchase carbon offsets equivalent to the amount of greenhouse gases it is emitting through daily operations. Carbon offsets (sometimes called renewable energy certificates or credits [REC], green certificates, green tags, or tradable renewable certificates) are investments in renewable energy projects that would not be possible without the business's investment in the offset project. Renewable energy projects are projects that create energy from sources other than fossil fuels, such as wind, solar, geothermal, methane, kinetic, hydropower, ocean waves, biomass, or other renewable sources. For example, zoos are capturing methane from animal waste and converting it to energy; subway systems are capturing kinetic energy from passengers to generate power; and nightclub dance floors capture kinetic energy to generate power.

Carbon offset projects are not currently regulated; therefore, third-party independent verification of the project should be a part of any investment made in carbon offsets by sustainable businesses. Additionally, the type of project should be carefully scrutinized before purchasing carbon offsets. For example, there is controversy over the value of planting trees as a carbon offset since actual carbon removed from the air is dependent on many factors, such as climate, soil, type of tree, age of tree, survival rate of saplings, and so on. It is worthwhile to read third-party independent research comparing carbon offset projects and companies, such as those provided by Kollmuss and Howell, Kollmuss and Howell (2007). Clean Air-Cool Planet, Clean Air-Cool Planet (2006). and others. The state of Colorado and the city of San Francisco have both created local carbon offset programs to ensure any business's (or individual's) purchase of carbon offsets goes to fund local projects.

One of the leading examples of corporate environmental impact can be documented through Wal-Mart. In 2005, CEO Lee Scott created a sustainability vision for Wal-Mart and set forth three ambitious goals: to be supplied 100% by renewable energy, to create zero waste, and to sell sustainable products. According to the company's latest progress report, Wal-Mart continues to experiment with the design of stores and its fifth-generation prototype store uses up to 45% less energy than a typical Supercenter. Wal-Mart Stores, Inc. (2008a). In 2007, the company purchased enough solar power for 22 facilities, Wal-Mart Stores, Inc. (2008a). and in 2008 the company purchased enough wind power for 360 stores and facilities, Wal-Mart Stores, Inc. (2008b). both of which will reduce greenhouse gas emissions. The company has achieved a 25% efficiency improvement in its trucking fleet and has recently installed small efficient diesel engines that allow parked truckers to turn off the motor engine and use the smaller engine for heating and cooling. This is expected to save the company \$25 million, 100,000 metric tons of carbon emissions, and 10 million gallons of diesel fuel annually. Wal-Mart Stores, Inc. (2008a). The company is working with its trucking suppliers to manufacture more aerodynamic and fuel-efficient trucks. The company has also introduced a sustainability scorecard in working with product suppliers to make products with less packaging waste. These few examples represent only a fraction of the environmental improvements made by Wal-Mart over the past 4 years. See [Note 2.13 "FREE Ways to Begin Greening Your Business"](#) for small changes you can make to green your business.

FREE Ways to Begin Greening Your Business

Here are some tips for the business that wants to start the journey toward green but does not have the funds to implement big changes. All the tips below are free to implement but require a change in behavior away from current practices.

1. Office paper: Switch from 100% virgin fiber paper products to recycled paper products. For example, we recently compared a business's current office and copier paper purchases to recycled office and copier paper. The final combination of paper choices recommended to the client represented a 10% cost savings, 13% fewer carbon dioxide emissions, and 35% fewer trees used when compared to their previous product. Other recycled paper products to consider are file folders, hanging file folders, notebook pads, binders, calendars, posters, envelopes, business cards, letterhead, forms, self-stick notes, and anything else made from paper! Savings: cost reductions, carbon dioxide emissions reductions (carbon dioxide emissions contribute to climate change), and fewer trees used.
2. Hand towels: Switch from 100% virgin fiber hand towels to recycled content hand towels. In a recent comparison for a client, we were able to identify 100% recycled hand towels that represented a 2% cost savings over their current product. Savings: cost reductions, carbon dioxide emissions reductions, and fewer trees used.
3. Toilet tissue: Switch from 100% virgin fiber bath tissue to recycled content bath tissue. In a recent comparison for a client, we were able to identify 100% recycled bath tissue that represented a 46% savings over their current product. Savings: cost reductions, carbon dioxide emissions reductions, and fewer trees used.
4. Napkins: Switch from 100% virgin fiber napkins to recycled content napkins. In a recent comparison for a client, we were able to identify 100% recycled napkins that represented a 10% cost savings over their current product. Savings: cost reductions, carbon dioxide emissions reductions, and fewer trees used.
5. Facial tissue: Switch from 100% virgin fiber tissues to recycled content tissues. In a recent comparison for a client, we were able to identify 100% recycled tissues that represented a 4% cost savings over their current product. Savings: cost reductions,

carbon dioxide emissions reductions, and fewer trees used.

6. Lighting: Turn off lights when not in use, and when replacing, use more energy-efficient lighting, such as compact fluorescent bulbs or LED lighting. Savings: can help reduce energy bills.
7. Electronics and office equipment: Turn off when not in use, and when purchasing, make sure it is ENERGY STAR certified. Dispose of old electronics through a recycling program (most cities will take old electronics for recycling). Old office electronics, furniture, and equipment can also go to donation programs through public schools, Habitat for Humanity ReStore, or other worthy causes. Savings: can help reduce energy bills, can reduce the amount of waste you pay to have removed, and will keep dangerous chemicals out of landfills.
8. Recycling: Check with your city sanitation department (or check the Earth911 search engine) to see what can be recycled and where it can be recycled. Common items for recycling include aluminum cans, glass, paper, plastic (including plastic bags), cardboard, Styrofoam packaging (Styrofoam food containers are not often recycled), electronics, cooking oil or grease, printer and ink-jet cartridges, and many other items. Savings: can reduce the amount of waste you pay to have removed.
9. Employee coffee mugs or drink cups: Encourage employees to bring reusable coffee mugs or drink cups (and plates and utensils) rather than using disposables. Savings: can reduce the number of disposable items you purchase and can reduce the amount of waste you pay to have removed.
10. Office supplies: Use recyclable or refillable items, such as printer cartridges, pens, CD and DVD disks, batteries, and other products. Savings: can help reduce the amount of office items needing replacement and can reduce the amount of waste you pay to have removed.
11. Printing and copying: For printing, begin by resetting the default font size on all computers to 10 or 11, if feasible, and resetting the default margin to 0.8 or 0.9. By changing the default margin settings to 0.75 on university computers, Penn State found that they could save per year over \$122,000 in paper costs, 45,142 reams of paper, 45 tons of waste, and 72 acres of forest. Use your computer and e-mail program as your filing system rather than printing hard copies. Use a printer management software program, such as GreenPrint or PaperCut, that will alert you to wasted paper (such as printing a sheet with one or two lines). Learn to use online forms and PDF files. Next time you send out a printing job, select a green printing company. For copying, change the default settings on the copy machine from one-sided to two-sided copies. By utilizing a combination of suggestions, students at the University of Arkansas at Little Rock found that the College of Business could save 39% or more per year in paper and ink costs. Savings: can reduce the amount of paper you buy, can reduce the amount of waste you pay to have removed, and can reduce your company's carbon emissions.
12. Cleaning supplies: Use green cleaning products or a green cleaning service. Savings: there may not be any financial savings here, but you are taking steps toward healthier indoor air quality, and your cleaning methods will be releasing fewer toxins into the environment.
13. Web site: Switch to a green or carbon neutral Web host provider. There are many Web host providers available that are competitively priced. Savings: cost savings and reduced carbon emissions.
14. Promotional products: Next time you purchase promotional products for your business, select those that are environmentally friendly, are made from recycled material, can be recycled, or those that are all three of these criteria, such as SIGG water bottles. Savings: there may not be any financial savings here, but you are taking steps toward being environmentally friendly and communicating that message to your customers.
15. Green team: Establish a green team of employees who are interested in helping your business become more environmentally friendly. The green team's focus should be twofold: identifying additional ways to make your business more environmentally friendly and educating employees, customers, and suppliers on the importance of being environmentally friendly as well as communicating the business efforts and accomplishments in this arena.

Where do you find these products? You can begin by checking with your current supplier. If your supplier doesn't carry the products, you can check with other local vendors, national suppliers, or online. If you implement the suggestions above, you will begin the journey toward green and will simultaneously save some green!

Source: Barakovic et al. (2009).

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