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An Example of Eco-Engineering: Interface, Inc.

In this chapter, we will look at a shining example of how the lifecycle model we describe, combined with clear priorities, can deliver ecological and economic benefits to real-world companies. Interface, Inc., one of the world's largest carpet manufacturers, has generated outstanding results by leading in "sustainability engineering," which it applies to virtually every facet of its business operations.

Interface is by no means the only example we could cite here, but we find it instructive that the maker of something as seemingly mundane as carpeting—and a leader in an industry long associated with pollution and harmful waste—can set a new standard in eco-effectiveness.

An Aggressive Initiative with Very Specific Goals

In 1994, Interface launched an aggressive environmental sustainability initiative that measured and monitored not only its own environmental impact, but also that of its suppliers. The initiative encompassed environmental sustainability as well as social and economic sustainability. The company also set very specific objectives for its sustainability efforts, laying out business and environmental goals on seven "fronts":[1]

- **Eliminate waste:** Eliminating all forms of waste in every area of business
- **Benign emissions:** Eliminating toxic substances from products, vehicles, and facilities

- **Renewable energy:** Operating facilities with renewable energy sources—solar, wind, landfill gas, biomass, geothermal, tidal, and low-impact/small-scale hydroelectric or non-petroleum-based hydrogen
- **Closing the loop:** Redesigning processes and products to close the technical loop using recovered and bio-based materials
- **Resource-efficient transportation:** Transporting people and products efficiently to reduce waste and emissions
- **Sensitizing stakeholders:** Creating a culture that integrates sustainability principles and improves people's lives and livelihoods
- **Redesigning commerce:** Creating a new business model that demonstrates and supports the value of sustainability-based commerce

Interface uses a lifecycle assessment (LCA) model to calculate global warming impacts from its products. The model analyzes raw material acquisition, product manufacture and transport, and how customers use the products. The CO_2 impacts are also considered based on material types, energy, packaging, and disposal.[2]

At the core of Interface's sustainability efforts is a measurement system that enables the company to understand its impact and change its behavior. These metrics are very specific and detailed. For example, the following are measured and monitored.

- **Net greenhouse gas (GHG) emissions:** Interface calculates its net GHG emissions in accordance with the WRI/WBCSD Greenhouse Gas Protocol. Eighty-one percent of the company's total emissions occur in North America, with only 13% occurring in Europe, due in part to the purchase of green electricity at most manufacturing facilities in the United Kingdom.
- **Toxic chemical elimination:** Steps to eliminate toxic chemicals from its facilities include replacement of ozone-depleting substances (ODSs) in nearly all facilities, elimination of volatile chlorinated chemicals and SARA 313 chemicals, including those that do not require mandatory reporting, and reduction in the number of suppliers, which gives each facility more accurate and efficient tracking capabilities concerning the types of toxic chemicals that enter the company's facilities.

The results for Interface have been remarkably positive from both an ecological and an economic perspective.[3]

- Cumulative avoided costs from waste elimination activities since 1995 are calculated to be more than $372 million.
- Total waste sent to landfills from carpet manufacturing facilities has decreased by 66% since 1996.
- Interface has reduced the total energy used at carpet manufacturing facilities (per unit of product) by 45% since 1996.
- The company's use of renewable energy increased to 27% in 2007. Three facilities currently purchase 100% of their electricity as green directly from the grid, and three other facilities have made 100% of their electricity green through the purchase of renewable energy credits. Interface also generates a portion of its energy through its three on-site photovoltaic arrays, and uses landfill gas in its LaGrange, Georgia, facility.
- The percentage of recycled and bio-based materials used to manufacture Interface products worldwide has increased from 0.5% in 1996 to 25% in 2007.
- On an absolute basis, Interface reduced its GHG emissions by 33% from its 1996 baseline through improved efficiencies, process changes, and direct renewable energy purchases. Interface has further offset its GHG emissions by another 49% through credits from its LaGrange landfill gas project, resulting in a net absolute GHG reduction of 82% (see Figure 10–1).

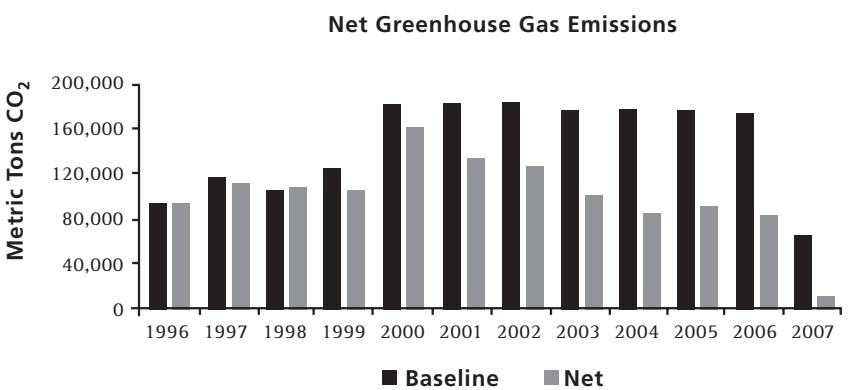

FIGURE 10–1 Net GHG Emissions at Interface, Inc.

- Water intake per production unit is down 75% in modular carpet facilities, and down 45% in broadloom facilities from 1996 due to conservation efforts and process changes such as eliminating the printing processes at some locations.
- The Interface ReEntry program diverted 133 million pounds of material from landfills between 1995 and 2007.