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Green is free: Creating sustainable competitive advantage through green excellence

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In the summer of 2007, Subaru Indiana Automotive (SIA) began running television advertisements touting its environmental performance. Among other things, the ads claimed that SIA had achieved “zero-landfill.” This would mean that the company, whose 3,500 employees manufacture almost 1,000 automobiles per day, throws away less trash in a year than an average family of four does in a day. We were curious: was this real, or was it “green-washing” – a marketing ploy to only *appear* environmentally responsible? Surely, the amount of waste from an operation this size had to be enormous. Where was SIA hiding it? Had the company creatively redefined the word “zero?” Or was it merely forcing suppliers to take the waste back and deal with it themselves? And if SIA was truly zero-landfill, how could it justify the costs involved?

Intrigued, we decided to conduct a study of SIA’s environmental initiative. We contacted the company and arranged a tour. Although skeptical at the outset, we did in fact find a company whose environmental performance was extraordinary. We then requested, and were granted full research access, which allowed us to conduct an extended and in-depth investigation.

SIA began its green initiative 20 years ago – long before business sustainability became a matter of general concern. Over the years, the company accumulated a record of environmental “firsts.” It was the first U.S. auto plant to receive ISO 14001 certification (1998); the first to have its grounds certified as a “Backyard Wildlife Habitat” by the National Wildlife Federation (2003); and the first automobile plant in the world to achieve zero-landfill (2004). Since 2000, it has reduced the waste discharged per vehicle by 99.9 percent (the remaining 0.1 percent is toxic waste that the EPA requires to be incinerated) and the electricity needed to make each vehicle by 25 percent. SIA now reuses more than six million pounds of packaging materials each year – saving

over \$2 million per year while keeping these materials out of landfills. But these numbers don’t begin to tell the story of the significant financial and competitive advantages that SIA’s green initiative has created for it.

In this article, we document the steps SIA took to get the results it did, and the unique competitive advantages it gained in the process. We also derive lessons that other organizations can use as they work to improve their green performance.

SIA’S GREEN JOURNEY

In 1987, Fuji Heavy Industries (the parent company of SIA) and Isuzu Motors Ltd. created the joint venture Subaru-Isuzu Automotive (SIA) to manufacture cars in North America. In early 2004, Subaru purchased Isuzu’s share of the venture and changed its name to Subaru Indiana Automotive while retaining the “SIA” designation.

Environmental concerns were a high priority at SIA from its inception. When locating the plant in 1987, SIA selected an 832-acre plot of land near Lafayette, Indiana. The company limited the plant’s footprint to the front portion of the property and developed the rest into a wildlife habitat that has become a home for beavers, deer, coyotes, and other animals native to Indiana, as well as for many varieties of birds including Bald Eagles and Peregrine Falcons.

Early on, SIA undertook a variety of *ad hoc* environmental activities, including some energy conservation initiatives and some recycling of major items such as steel, cardboard, plastics, and packing materials. But the company’s environmental effort became more systematic after the 1996 publication of the ISO 14001 environmental management system (EMS) standards. SIA began working toward certification, which it achieved in 1998.

The ISO 14001 EMS formalized the company's approach to environmental management. SIA began systematically measuring its waste streams and targeting areas offering the greatest improvement opportunities. One, for example, involved the solvent used to flush the painting system between color changes, a process which is done every three to five vehicles. The contaminated solvent was being shipped offsite for processing. Paint solvent is one of the more toxic chemicals used in auto manufacturing, and requires special and costly procedures for handling and transportation. SIA developed a novel approach to distill and reuse this solvent. While normal distillation leaves a toxic sludge of paint residue and solvent in the bottom of the still, SIA's new vacuum process leaves only a dry cake. This cake is sent to a company that extracts the organic compounds for reuse and uses the remaining char as an ingredient to manufacture coating material for ladles in the steel industry.

Integrating Green into Daily Operations

Late 2001 to early 2002 was a watershed period for SIA's environmental effort. The leadership team announced the goal of reaching zero-landfill by 2006, and reinforced the decision in several ways. First, key new hires were made to strengthen its environmental staff. Second, a partnership was formed with Allegiant Global, a byproduct management and logistics firm. If waste was no longer to be shipped to a landfill, something had to be done with it. Allegiant provided technical expertise and the network needed to find, and in some cases create, customers who could use SIA's waste materials as raw materials.

But the most significant action was to integrate the green initiative into regular operations, and to pay particular attention to involving front-line workers. SIA accomplished this integration by incorporating green into its already well-established lean program. Its *kaizen* (improvement) idea system was rated as one of the best in Fuji Heavy Industries.

Every year *kaizen* teams from around the world travel to Japan to compete in the parent company's *kaizen* competition. In 2006, a team from SIA won the world championship with its campaign titled "The Horror of IPD." (IPD stands for "In-Process Damage," and includes the chips, scratches, dents, and other minor damage that takes place during the assembly process.) The team came up with a total of 78 ideas over the period of the campaign that cut IPD by 86 percent, saving SIA \$465,000 a year. In both 2007 and 2008, SIA teams came in second.

Integrating the green initiative into daily operations proved unexpectedly easy. Every work team already had improvement goals in quality, productivity, and safety. Environmental improvement goals were readily accepted as a worthy addition.

In order to help front-line workers come up with more and better green ideas, SIA introduced the 3Rs – "reduce, reuse, recycle" – into its lean training. The 3Rs are part of what is often referred to as the "Waste Management Hierarchy" (see Fig. 1).

The waste hierarchy ranks the different kinds of environmental actions in increasing order of environmental benefit:

1. To **burn** material for energy is better than sending it to a landfill;
2. To **recycle** it is better than burning it;
3. To **reuse** material is better than recycling it;
4. To **reduce** the amount needed is better than reusing it; and
5. To **eliminate** the need for material is better than reducing it.

The 3Rs are easy to remember, and spark ideas by getting people to think beyond simple recycling. Interestingly, the further up the hierarchy a green action is, the more profitable it is. The vacuum distillation process, discussed earlier, illustrates how this works. Because the used solvent could

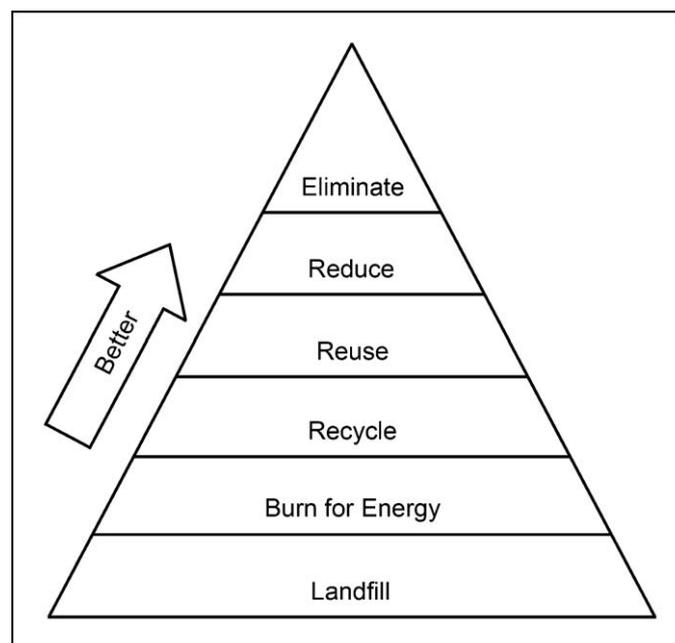


Figure 1 Waste Management Hierarchy

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