



## GREEN FOOTWEAR MANUFACTURING IN CHINA FOR DECKERS OUTDOOR CORPORATION: AN INTERNAL BUSINESS PLAN TO REDUCE THE ENVIRONMENTAL IMPACT OF MANUFACTURING FACILITIES

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SPRING 2009

### Overview

- Deckers Outdoor Corporation can realize financial benefits from our proposed initiative to green manufacturing facilities in China. These benefits can arise from reduced risk (due to preempting regulations, increasing the certainty of resource availability, and avoiding negative public perception of Deckers) and positive consumer response (due to consumers who are more likely to recommend, buy, or pay more for Deckers products). For just one of the three categories of reduced risk—avoiding negative public perception—an investment in the initiative will return \$3.46 to \$20 for every \$1 spent.
- To help facilitate the implementation of our initiative, we created a Facility Audit and Green Facility Recommendations Handbook. These tools will allow Deckers and the manufacturing companies to determine a baseline of the facilities' current environmental performance and to learn how to green the facilities.
- We applied our tools to a case-study facility in Hebei, China, and developed 14 suggestions to improve the environmental performance of the facility.

### Motivation

Deckers Outdoor Corporation is interested in improving its environmental performance. Thus far, Deckers has focused its sustainability efforts on its Simple Shoes brand through the use of sustainable materials and take-back programs. By their nature, many of Deckers' footwear lines require the use of materials, such as leather and sheepskin, which will always have some environmental impacts. However, Deckers is committed to ensuring that its products are made as cleanly as possible.<sup>i</sup> To this end, Deckers has implemented Ethical Supply Chain Guidelines to guide its corporate social responsibility efforts.

To help ensure that the expectations of its Ethical Supply Chain Guidelines are met during the manufacturing process in China, some Deckers employees are interested in promoting the greening of the facilities where its products are assembled. To further this interest, our project delivers two products:

- An **internal business plan** to identify the costs and benefits and calculate the rate of return on an investment in an initiative to reduce the environmental impacts of the footwear manufacturing facilities in China where Deckers products are assembled.
- A **toolbox** containing an audit and handbook to help Deckers launch an initiative to reduce the environmental impacts of the footwear manufacturing facilities in China where Deckers products are assembled.

### The Problem and Opportunity

Footwear consumption in the U.S. has increased by almost 200% since 1978, and footwear manufacture has moved to China due to decreased regulations, low-cost labor, and expertise.<sup>ii</sup> The vast amount of footwear consumed every year and the less stringent environmental regulations in China mean that the impacts incurred during the life cycle of each shoe combine to have significant environmental impacts. An assessment conducted recently for Deckers found that materials production and assembly caused around 90% of all environmental impacts associated with the life cycle of the shoes assessed.<sup>iii</sup> Part of this 90% includes the impacts (e.g., water and energy use, waste production, and materials consumption) generated from the facilities where footwear are assembled. While these impacts may not be as extensive as those produced further back in the supply chain, Deckers is already taking steps to reduce the impacts of the materials used, and reducing the impacts of the manufacturing facilities can further reduce the overall impacts of Deckers footwear. Additionally, if they are perceived negatively by customers, the activities that occur at these facilities create the most risk for Deckers due to the direct connection between Deckers and the manufacturing companies. These risks can create problems for Deckers' business, but with these problems come an opportunity for Deckers to avert the risks to its business and possibly stimulate increased brand visibility and sales, both of which can translate to increased profits.

### The Solution

In order to avert the aforementioned risks posed by outsourcing manufacturing to China, this project is focused on an initiative within Deckers to reduce the environmental impacts of the manufacturing facilities in China where Deckers products are assembled.

#### The Initiative

Create a division within Deckers to research, facilitate, and monitor the implementation of environmental-sustainability-focused policies, programs, retrofits, and upgrades to the manufacturing facilities in China.

### Financial Analysis

#### Costs

Though the primary costs to improve the facilities will fall on the manufacturing companies themselves, Deckers will incur some costs to fund the initiative. These costs will include staff salary and overhead, communications, and membership fees, and will total \$440,000 for the first year and increase by 5% per year.

#### Benefits

The two main sources of benefits to Deckers, as outlined in Figure 1, are risk reduction and positive consumer response.

Figure 1: Summary of Benefit Sources

#### Risk Reduction

- Preempting Regulations
- Increasing Certainty in Resource Availability
- Preventing Negative Public Perception of Deckers

#### Positive Consumer Response

- More Likely to Buy Deckers Products
- More Likely to Recommend Deckers
- Willing to Pay More For Deckers Products

Negative public perception of Deckers could be caused by either a catastrophic event such as a spill or contaminated products, or simply by poor current environmental practices catching the public's attention. Because this category of risk has the most potential to affect Deckers' bottom line directly, we have quantified its potential to save Deckers money. To do this, we considered how the following two factors would vary with and without the initiative:

- (1) The percent loss in profit caused by the event
- (2) The probability of such an event occurring

#### Without Initiative

**Profit Loss:** 10%

**Justification:** Specified by Deckers management and consultants; confirmed by market research into similar events (e.g., due to boycotts from their use of sweatshop labor in the 1990's, Nike saw a decrease in revenue of 15.5% from 1997 – 1998, a time when the overall footwear industry was growing).

**Probability:** 10% – 40%

**Justification:** Specified by Deckers management and consultants; based on the lack of a dedicated sustainability department at Deckers and the current success and visibility of the Ugg brand, which invites attention from consumers and watchdog organizations.

#### With Initiative

**Profit Loss:** 10%

**Justification:** While it is likely that with the initiative Deckers will be better equipped to handle a negative event and lessen the impact on profits, we maintained the assumption of 10%.

**Probability:** 5%

**Justification:** While having stronger environmental regulations at the facilities in China will reduce the risk of a negative event, there is always some possibility that a catastrophe will happen or a consumer group will find fault with current practices.

The following equations demonstrate how these assumptions can be used to calculate losses, avoided losses, and the return on investment (ROI) expressed as a dollar amount for every dollar spent and as a percent difference between costs and avoided losses.

#### Equations for Avoided Losses and ROI

$$\text{Profit} \times \text{Profit Loss} \times \text{Probability} = \text{Losses}$$

$$\frac{\text{Losses Without Initiative}}{\text{Costs}} - \frac{\text{Losses With Initiative}}{\text{Costs}} = \text{Avoided Losses}$$

$$\frac{\text{Avoided Losses}}{\text{Costs}} = \text{Return on Every } \$1 \text{ Spent}$$

$$\frac{\text{Avoided Losses} - \text{Costs}}{\text{Costs}} \times 100 = \text{ROI Expressed as a Percent Difference}$$

As the initiative develops, it is likely to further decrease the risk of a negative event as the effort will improve over time and gain greater visibility in the consumer market. To account for this assumed trend, we analyzed the potential savings over the course of five years. To do this, we assumed that without the initiative, the probability drops by 0.5% each year.

We used an annual profit of \$270 million, which was assumed to grow by 10% each year, and a discount rate of 5% to account for the future value of money. We also assumed that costs accrue starting in year one (and increase by 5% per year), while benefits accrue starting in year two. Depending on the probability of an event occurring without the initiative in place, the investment will return \$3.46 to \$20 for every \$1 spent. This translates to a percent difference between costs and avoided losses of 246% to 1,900%.

**Results: Return on Investment**

**\$3.46 – \$20 for every \$1 spent**

**246% – 1,900% difference between costs and avoided losses**

The cost of taking action to decrease the risk of a negative event is significantly less than the profit losses caused by inaction. Additional benefits from other types of reduced risk (preempting regulations and increasing the certainty of resource availability) and positive consumer response to the initiative can result in even greater ROI.

### Toolbox

To help facilitate implementation of the initiative we created an initiative toolbox containing the following:

#### Facility Audit

The audit can be used to determine a baseline of the facilities' current environmental performance. To create the audit, we looked to several international green building certifications, including LEED, GBA, BEPAC, and BREEAM, in order to understand what building characteristics to consider. The audit we created is an Excel-based tool that focuses on Policies and Plans, Water, Energy, Indoor Air Quality, Materials and Resources, and Building Sites. Each section has subsections containing specific questions about the facility, equipment, operating procedures, and maintenance. An excerpt from the audit is shown in Figure 2.

Figure 2: Audit Excerpt

**Energy**

The questions on this page address the energy use of the selected manufacturing building. Please answer these questions as accurately as possible.

- Describe the HVAC system in use for the building. Please include information on the equipment types, refrigerants, and hours in use per day, if applicable.

	Type	Make	Model	Refrigerant	Hours
Air Conditioning					
Heating					
Refrigeration					

- For all lighting fixtures in the facility, please include the type, make, model, quantity, and hours in use per day.

	Type	Make	Model	Quantity	Hours
Lighting Fixture Type 1					
Lighting Fixture Type 2					
Lighting Fixture Type 3					

#### Green Facility Recommendations Handbook

The handbook is a beginner's guide to green buildings and covers the following areas: Energy, Water, Materials and Resources, Sustainable Sites, and Employee Health and Productivity. It makes specific recommendations for each of these sections on what can be done to improve the environmental performance of a facility and provides definitions, references, and cost and benefit information where appropriate. An example recommendation from the handbook is shown below.

**Sustainable Purchasing Policy**

Develop and implement a sustainable purchasing policy. The following characteristics should be maximized to the extent possible in purchased products:

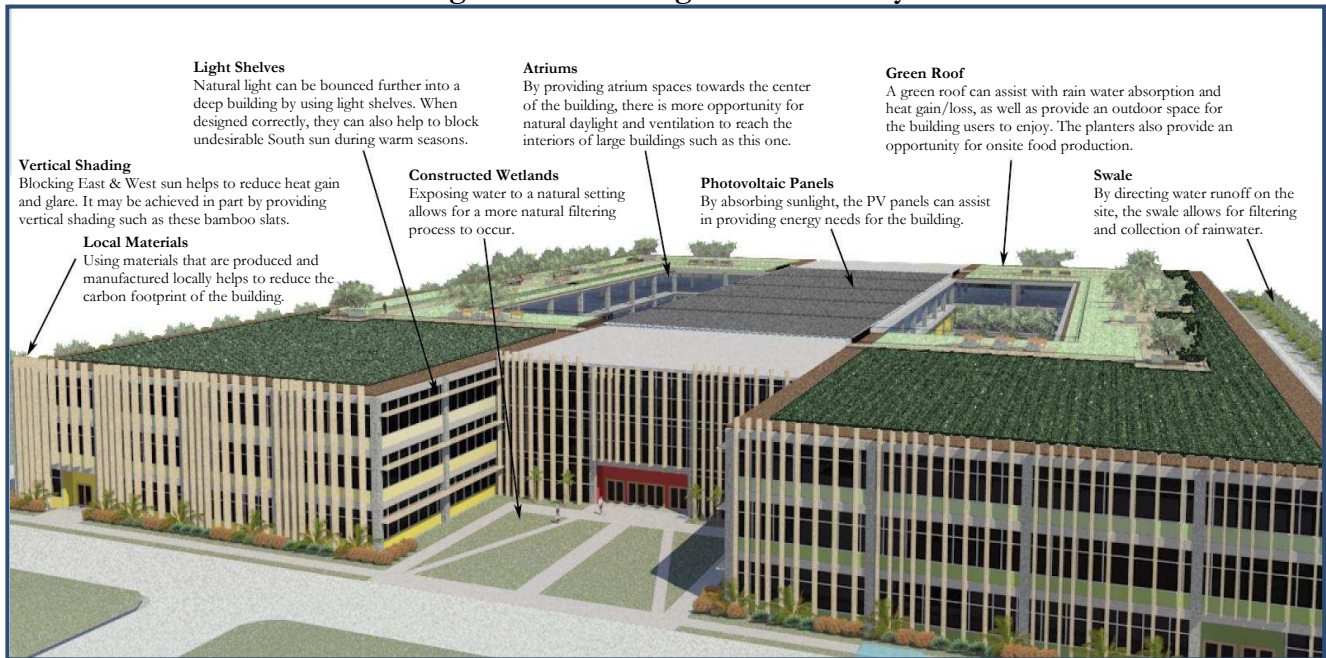
- recycled content (post-consumer and post-industrial)
- biodegradability
- use of renewable materials
- use of local materials
- energy efficiency
- water efficiency
- certification by relevant organizations (e.g., Forest Stewardship Council, Energy Star, Green Seal)

The following substances, which purchased products can contain, should be avoided to the maximum extent possible:

- mercury, lead, and other hazardous substances
- volatile organic compounds (VOCs)
- use of ozone depleting substances (ODS) and high-global-warming-potential (GWP) gases

The handbook also contains renderings of an example ideal green manufacturing facility, as displayed in Figure 3.

**Figure 3: Rendering of New Facility**



### Case Study

To test our tools and generate a product for Deckers to use to begin implementation, we conducted a case study on a manufacturing facility in Hebei, China. The manufacturing facility, as shown in the picture below, is a multi-building campus that manufactures only Deckers footwear. Based on the results of our audit and using our handbook, we developed priority and secondary suggestions for the case study facility. These suggestions, which are elaborated on in the report, include the following:

#### Priority Suggestions

- Insulate hot water pipes
- Paint roof white
- Improve lighting efficiency
- Perform water audit
- Harvest rainwater
- Conduct a waste stream audit and create a solid waste management policy
- Test noise and air quality
- Conduct training
- Commission the facility

#### Secondary Suggestions

- Install solar tubes
- Install wind turbines or solar panels
- Purchase environmentally-friendly vehicles
- Grow an organic garden
- Landscape for natural cooling



### Acknowledgements

We would like to thank Gary Libecap, Mark Fegley, Pat Devaney, Chien-Ju Lin, Sarah Anderson, Kathy Graham, Amy Burgard, Dick Ambrocio, Jessica Min, and Perrin Pellegrin for their help and expertise. We would also like to thank Alexis Austin and Julia Metz for their fabulous architectural renderings.

<sup>i</sup> Derby, M. 2008. "Driving Deckers." *Footwear News*. March 31, 2008.

<sup>ii</sup> AAFA. 2006 and 2007. "ShoeStats." American Apparel and Footwear Association. July 2006 and 2007. <http://www.apparelandfootwear.org/Statistics.asp>.

<sup>iii</sup> Albers, K., P. Canepa, and J. Miller. 2008. "Analyzing the Environmental Impacts of Simple Shoes: A Life Cycle Assessment of the Supply Chain and Evaluation of End-of-Life Management Options." Bren School of Environmental Science & Management.