

## Overview

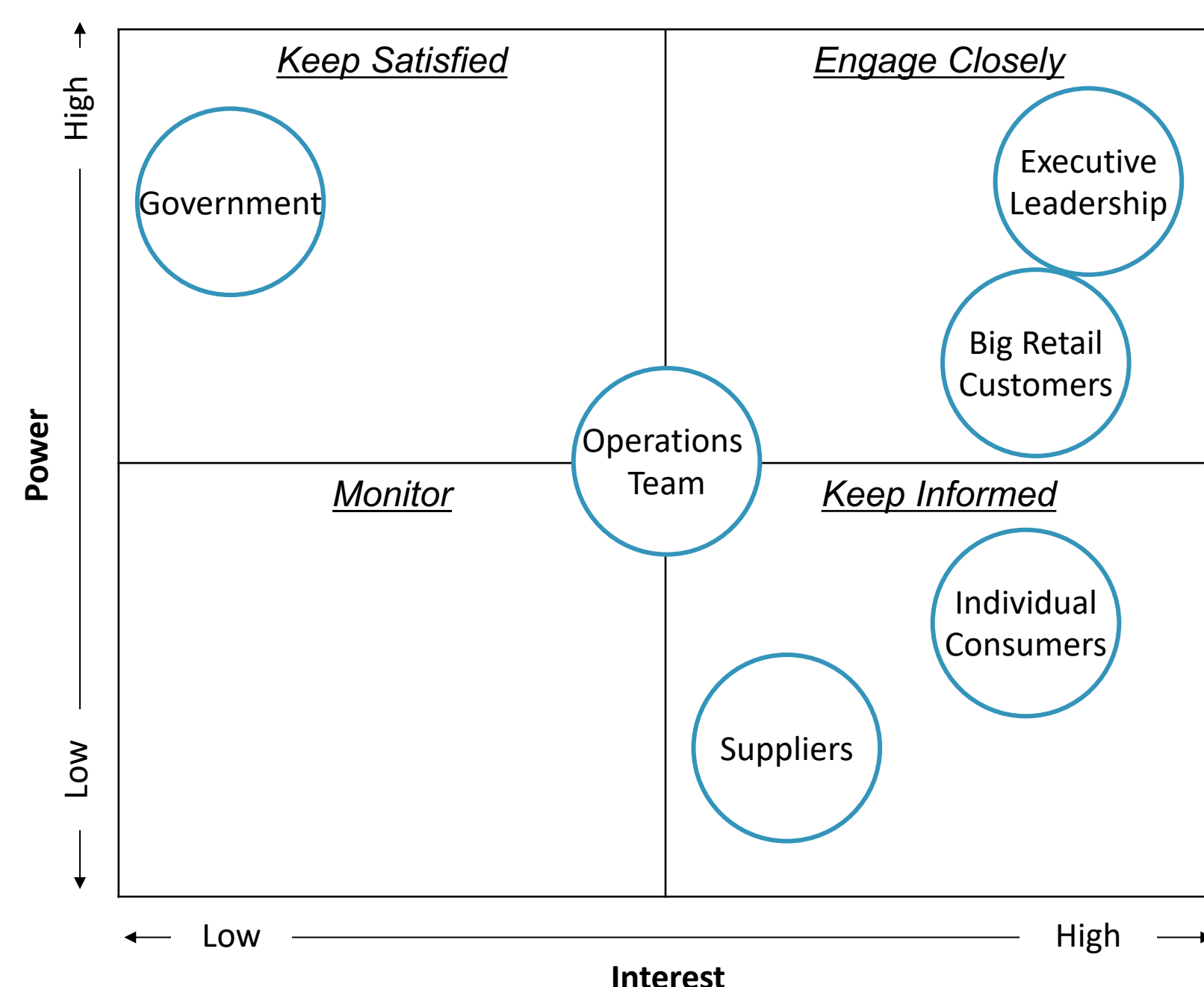
Founded in 1984, **Okabashi Brands** is a family owned and operated shoe company headquartered in Buford, Georgia. Historically focused on foot health and wellness through their Okabashi and OkaB brands, the company recently launched its **Third Oak brand focused on sustainability**.

Okabashi shoes are **Made in USA from soy-based PVC that is 100% recyclable and lasts 5+ years**. In contrast, 99% of American-worn shoes are imported, non-recyclable and only last a single season. The company sought help from Georgia Tech to answer the following questions:

### PROBLEM QUESTIONS + SCOPE

- What is Okabashi's carbon footprint **compared to competitors**?
- What are the benefits and recommendations for creating a **closed-loop recycling program** for Third Oak's Black Scout flip-flops?
- What level of post-consumer recycled content must Okabashi achieve to gain both **environmental and financial benefits** with such a program?

## Stakeholder Analysis



Stakeholder	Stake in Project	What do we need from them?	Perceived attitudes/risks	Stakeholder Management Strategy
Executive Team	Sponsor of the project. Needs it to succeed to support company mission & vision	Support and advocating internally for success	Very engaged and enthusiastic to help to succeed	Involvement in Project Steering Board, Regular updating meeting with project leader
Operations Team	Recycling content increases may affect production process	Financial & production data & constraints	Interested but skeptical about the potential for success	Involvement in operational issues and seek input
Big Retail Customers	Ability to sell more sustainable products & additional marketing	Adoption and support for rollout	Unclear – more engagement needed	Survey and engage for roll out
Individual Customers	Ability to support sustainable products and recycle old products	Engagement in initiative for return program	Unclear – more engagement needed	Survey to gauge interest for participation

## Carbon Calculations

### CALCULATIONS

The team calculated three scenarios to assess the carbon savings and opportunities for Okabashi compared to its competitors.

- CURRENT SCENARIO:** Carbon savings of 'Made in USA' vs. 'Made in China' + 10% post-manufacturing recycled content
- MOST LIKELY FUTURE SCENARIO:** Recycling an additional 7% post-consumer recycled content (assuming a 14% return rate with B2B partners and 50% discard rate for quality control)
- BEST CASE FUTURE SCENARIO:** Recycling 35% post-consumer recycled content, achieving the maximum recycled input capacity of the shoe

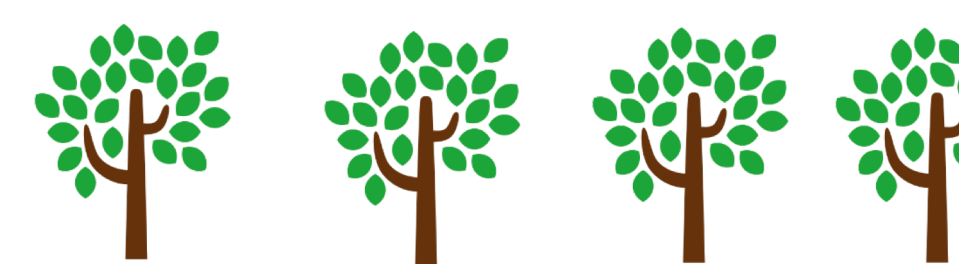
	COMPETITORS	CURRENT SCENARIO	MOST LIKELY SCENARIO	BEST CASE SCENARIO
	Made in China 100% Virgin PVC	Made in USA Virgin + 10% Post-Manu Recycled PVC	Made in USA 10% Post-Manu, 7% Post-Consumer Recycled PVC	Made in USA 10% Post-Manu, 35% Post-Consumer Recycled PVC
CO2 per kg produced (kg)	1.70	1.70	1.70	1.70
CO2 per kg shipped (kg)	4.54	2.20	2.20	2.20
Total CO2e Emissions (kg):	6,963,413.49	3,959,486.31	3,838,813.29	3,356,121.23
Total CO2e Emissions (tons):	7,677.41	4,365.48	4,232.43	3,700.24
Total CO2e Emissions Saved (lbs):	-	1,362,325.25	1,417,052.24	1,635,960.21

### FINDINGS

Okabashi saves **~1.4 million pounds of CO<sub>2</sub>/yr** by supplying, manufacturing, and selling in the USA versus China and incorporating 10% post-manufacturing recycled scrap in their shoes today.

In the most likely future scenario, based on financial and stakeholder analysis, **Okabashi could save an additional 54,727 pounds of CO<sub>2</sub> annually** by incorporating 7% post-consumer recycled content into their shoes.

**17% recycled content =**



**30.8 trees planted/yr\***

Or



**3.4 Ford Fusion's taken off the road/yr\*\***

\*Carbon Offset Calculator. Trees Atlanta. <https://treesatlanta.org/resources/carbon-offset-calculator/>  
\*\*U.S. Energy Information Administration. <https://www.eia.gov/tools/faqs/faq.php?id=307&t=11>

## Financial Calculations

The team performed a **sensitivity analysis** around varying discount rates for consumers on their next shoe purchase and what percentage of shoes produced annually would be recycled the following year.

### SCENARIOS TESTED

- Current discount rate w/ industry recycle rate
- No discount given w/ industry recycle rate
- Current discount w/ maximum possible recycle rate
- Optimized Scenario

	Discount: 15% Recycle Rate: 2%	Discount: 0% Recycle Rate: 2%	Discount: 15% Recycle Rate: 70%	Discount: 1% Recycle Rate: 14%
NPV (5 Years)	\$(1.2 Million)	\$(0.8 Million)	\$(8.9 Million)	\$18 Thousand
Pay-out Period	Never	Never	Never	2 Years
ROI (5 Years)	-9,246%	-6,129%	-71,445%	144%

### ASSUMPTIONS

- Constant annual production and sales of shoes
- Discounts do not motivate increase in sales
- Annual operating costs based on info from Okabashi
- Initial investment for ROI based primarily on cost of recycle bins

### EQUATIONS

$$\% \text{ less raw material used} = \frac{\# \text{ of shoes/yr} \times \text{recycle rate} \times 50\% \text{ usable recycled content}}{\# \text{ of shoes/yr}}$$

$$ROI = \frac{NPV}{\text{Recycling Program Initial Investment}}$$

$$NPV = \sum_{t=0}^{t=5} \frac{FCF}{(1+r)^t}$$

## Co-Benefits

Okabashi's new Third Oak brand uses "sustainable, soy-based, vegan and 100% recyclable shoes" as its value proposition.

### Sustainability earns Okabashi new retail contracts

This **new brand position** earned Okabashi relationships with retailers such as Target, J. Crew, Mountain Equipment Co-Op, and Bloomingdales, which will be co-hosting a Sustainability Pop-Up Shop with Okabashi in Spring/Summer 2019. Target marks Okabashi's first national contract with a major retailer and is due to Okabashi's flip flops being 100% recyclable.

Should Okabashi invest in its commitment to shoe sustainability and recyclability, the company may **sustain a competitive advantage in the sustainable shoe category and grow market share** among sustainability-minded retailers, consumers, resorts and spas.



## Recommendations

Based on financial, carbon savings, and market differentiation factors, the team recommends Okabashi pursues the following initiatives:

- Commit to achieving recycled (not just recyclable) shoes**
- Engage spa and resort partners** in a closed-loop recycling program to create a more consistent, higher volume supply of recycled content
- Partner with retailers** to pilot in-store and online take-back programs
- Reassess current 15% consumer discount incentive** and consider replacing with 1% donation to charity, tree planting, or ocean clean-up



## Acknowledgements

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