A Better World,
Through Better Business

NYU STERN

Center for
Sustainable Business

The Business Case for Sustainable Apparel

Strategy for Improving Energy Management

December 2020

Apparel Industry Sustainable Strategies Framework

NYU Center for Sustainable Business

Apparel companies are driving sustainability improvements using several strategies:

- Reducing Chemical Impact
- Improving Water Management
- **Improving Energy Management**
- Investing in Reduction of Material Waste
- Implementing Sustainable Raw Material Sourcing
- Investing in Circularity and Innovation
- Investing in Employee and Supplier Well-Being
- Investing in Sustainable Brand Marketing and Communications

*Strategy highlighted in green are built out in this presentation

Defining the Sustainability Strategies

Reducing Chemical Impact	Company reduces the impact of chemicals in its supply chain
Improving Water Management	Company focuses on water management through increased water efficiency, conservation, and reduction of wastewater quantity, while improving wastewater quality
Improving Energy Management	Company focuses on practices to decrease greenhouse gas emissions by focusing on improving energy efficiency, changing distributions modes, and increasing use of renewable energy
Investing in Reduction of Material Waste	Company implements practices to mitigate waste in areas such as fabric, consumer clothing, peripherals, and packaging
Implementing Sustainable Raw Material Sourcing	Company spurs innovation of new materials development and substitutes more sustainable materials in existing products and packaging
Investing in Circularity and Innovation	Company invests in innovation to achieve new circular business models which focus on product takeback and innovative design methods
Investing in Employee and Supplier Well-Being	Company improves labor conditions in their supply chain and across their corporate workforce through practices that directly and indirectly benefit the health and safety of the workforce
Investing in Sustainable Brand Marketing and Communications	Company invests in marketing and education around sustainability through engagement campaigns and branding

Improving Energy Management

	Product Development/ Procurement	Raw Materials	Manufacturing	Distribution	Retail	Consumer Engagement
Reduce Greenhouse Gas Emissions	Reduce Travel/ Commuting				Reduce Travel/Commuting	
		Source More from Renewable Energy Powered Facilities				
		Invest in Energy Efficiency				
		Source more using Regenerative Agriculture/Carbon Sequestration Methods				
Prioritize Lower Carbon Distribution Methods		Reduce Air Freight				
		Use more Sustainability-Certified Shipping and Trucking Companies				

Improving Energy Management
Overview of Sustainability Strategy and Relevant Mediating Factors

In the following slides, we will focus on the benefits realized from *Improving Energy Management,* which are categorized based on the relevant mediating categories highlighted below:

Sustainability Strategy Definition	
Improving Energy Management	Company focuses on practices to decrease greenhouse gas emissions by focusing on improving energy efficiency, changing distributions modes, and increasing use of renewable energy

Relevant Mediating Factors	Benefits that…
Customer Loyalty (CL)	Attract an increasing number of conscious buyers & consumers, while reducing retention costs
Employee Relations (ER)	Improve employee workplace culture and retain talent
Operational Efficiency (OE)	Optimize corporate and supply chain efficiencies to lower cost and increase profits
Risk Management (RM)	Encourage risk mitigation and resilience within the value chain
Sales & Marketing (SM)	Increase volume of sales through brand and marketing policies
Supplier Relations (SR)	Improve upon the relationships between the company and its suppliers
Stakeholder Engagement (SE)	Improve goodwill amongst the broader stakeholder community (i.e. NGOs)

Improving Energy Management
Overview of Benefits and Monetization Methods (1/2) Cont.

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Practice	Sub-Practice	Proposed Benefits	Mediating Factors	Proposed Monetization Methods	Financial Impact Priority
Prioritize Lower Carbon Distribution Methods	Reduce Air Freight	Reduced transportations costs (by shifting transport towards sea and trucking)	OE	Calculate cost differential of shipping costs before and after shift in transport mode (from air to sea and trucking) to achieve avoided cost savings	✓
		Increased Societal Benefit through a reduction in GHG emissions	SE	Calculate savings in societal benefit using the reduction of GHG emissions (from shift in transport mode) by the social cost of carbon	
		Reduced impact for future regulations on emissions	RM	Calculate differential of GHG emissions before and after shift in transport mode (from air to sea and trucking) and use NPV to determine future cost savings on estimated carbon and regulatory taxes	
	Use More Sustainable Certified Shipping and Trucking Companies Source Assuming DC to store transport **For this sub-practice, we focused on trucking with air under the 'reduce air freight practice'. We can research sustainable certified sea shipping if needed.*	Reduced costs by utilizing shared services for full truckload (TL) (ex. flock freight – partner of US Environmental Protection Agency's SmartWay Transport Program)	OE	Calculate cost differential of shipping costs before and after transition to sustainable shipping to achieve avoided cost savings	✓
		Increase customer loyalty from company participation in sustainable certified shipping and trucking	CL	Calculate incremental profit to the company from sales spurred by the existence of more sustainable-certified shipping and trucking companies minus associated costs	

Improving Energy Management
Overview of Benefits and Monetization Methods (1/2) Cont.

Practice	Sub-Practice	Proposed Benefits	Mediating Factors	Proposed Monetization Methods	Financial Impact Priority
Prioritize Lower Carbon Distribution Methods	Use More Sustainable-Certified Shipping and Trucking Companies	Increased sales due to delivery of product by more efficient transport **Increasing speed to market without air transport should increase customer loyalty and sales*	CL SM	Calculate incremental profit due to usage of more sustainable-certified shipping and trucking in on-time delivery of product based on optimized shipping routes and reduced timeframe for transport	
		Increased Societal Benefit through a reduction in GHG emissions	SE	Calculate savings in societal benefit using the reduction of GHG emissions (from shift to sustainable-certified shipping and trucking) quantified by the social cost of carbon	
		Reduce impact for transport disruptions by utilizing more efficient shared services	RM	Calculate estimated reduction in # of transport disruptions before and after implementation of more sustainable-certified shipping and trucking and multiplied by cost per disruption to achieve avoided cost savings	✓
		Reduced impact for future regulations on emissions	RM	Calculate differential of GHG emissions before and after shift in transport (to more sustainable-certified shipping and trucking) and use NPV to determine future cost savings on estimated carbon and regulatory taxes	

Improving Energy Management
Overview of Benefits and Monetization Methods (2/2)

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Practice	Sub-Practice	Proposed Benefits	Mediating Factors		Proposed Monetization Methods	Financial Impact Priority
Reduce Greenhouse Gas Emissions	Source More from Renewable Energy-Powered Facilities	Reduce costs by sourcing more from supplier and manufacturing partners that use renewable power **No upfront CapEx from company; sourcing and manufacturing method only*	OE	SR	Calculate cost differential of supplier and production costs before and after sourcing with manufacturing partners using renewable energy to power. Include incremental cost of sourcing from new facilities (on-boarding, development, testing, production-run process, etc.) **Manufacturing partners to analyze per unit cost of renewable energy used compared to per unit cost of traditional energy and input into costs assigned per product produced*	
		Investing/co-investing with suppliers in onsite equipment for renewable power **Shared or total CapEx from company for renewable energy usage at supplier facility*	OE	SR	Calculate upfront investment cost's impact on supplier production costs vs existing production costs using traditional/non-renewable energy sources *Volume and cost of energy consumed for manufacturers per unit produced • *Company investment for renewable power sources and infrastructure – cost differential before and after installation with company obtaining total savings included in product cost* • *Co-invest for renewable power sources and infrastructure – cost differential before and after installation with company obtaining shared savings in the product costs*	✓

Improving Energy Management
Overview of Benefits and Monetization Methods (2/2) Cont.

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Practice	Sub-Practice	Proposed Benefits	Mediating Factors	Proposed Monetization Methods	Financial Impact Priority
Reduce Greenhouse Gas Emissions	Source More from Renewable Energy-Powered Facilities	Increased societal benefit through a reduction in GHG Emissions based on energy (kwH) displacement	SR SE	Calculate savings in societal benefit using the displacement/reduction of kwH (converted into GHG emissions) by the social cost of carbon	
		Reduced supply chain disruption, given less supplier dependency on fossil fuels as energy sources	RM	Calculate estimated reduction in # of supply chain disruptions before and after usage of renewable energy powered facilities multiplied by cost per disruption (or loss of sales per disruption) to achieve estimated cost savings **Based on Forecast of traditional energy price volatility and expected renewable energy growth for a 3-5 year period*	
		Reduced risk for future carbon regulations	RM	Calculate cost differential of kwH usage and associated costs before and after sourcing more from renewable energy powered facilities and use NPV to determine future cost savings on increase REC costs	✓

✓ **= If implemented, this benefit can realize substantial financial impact**

Improving Energy Management
Overview of Benefits and Monetization Methods (1/2)

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Practice	Sub-Practice	Proposed Benefits	Mediating Factors	Proposed Monetization Methods	Financial Impact Priority
Reduced Greenhouse Emissions	Invest in Energy Efficiency source	Reduce costs for energy usage/consumption	OE	Calculate the cost differential between an upgrade to efficient energy usage (including investment costs of switching to energy efficient resources, total energy usage costs, efficiency investment costs (to program administrator)) and traditional energy usage	✓
		Increased Societal Benefit through a reduction in GHG Emissions, based on energy (kwH) usage	SE	Calculate savings in societal benefit using the reduction of kwH (converted into GHG emissions) by the social cost of carbon	
		Increased brand value from investing in energy efficiency	CL SM	Calculate incremental profit to the company from sales spurred by the existence of energy efficiency minus associated costs of utilizing efficient resources	
	Source More using Regenerative Agriculture/Carbon Sequestration Methods	Reduced material costs based on regenerative agriculture	OE	Calculate the cost differential between usage of raw materials cultivated by regenerative agriculture practices (including investment costs in infrastructure to sequester carbon from the atmosphere, tax incentives for usage of sequestered carbon and increased crop yield) and traditional agriculture practices (including costs for pesticides and crop yield)	✓
		Increased brand value from investing in regenerative agriculture/carbon sequestration	CL SM	Calculate incremental profit to the company from sales spurred by the usage and marketing of materials generated from regenerative agriculture using carbon sequestration	
		Reduced risk for future carbon regulations	RM	Calculate cost differential of before and after sourcing more from suppliers using regenerative agriculture methods and use NPV to determine future cost savings on increased material costs and taxation	

Improving Energy Management
Overview of Benefits and Monetization Methods (2/2) Cont.

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Practice	Sub-Practice	Proposed Benefits	Mediating Factors	Proposed Monetization Methods	Financial Impact Priority
Reduce Greenhouse Gas Emissions	Reduce Travel / Commuting	Reduce costs from reduction in travel with reduction of use of private aircraft, transitioning to commercial flights or less carbon intensive methods of transport when feasible	OE	Calculate cost differential between company savings in reduction of travel (by use of private aircraft and/or research, development, and production trips) and quantified associated costs (potential product quality/ design concerns/delivery delays, potential lost productivity, additional capex expenditure for technology where feasible)	✓
		Increase productivity with less time on commuting/increase work from home **This includes but not limited to offering flexible work from home policies, providing employee mass transit benefits, and transitioning to teleconference when feasible*	OE	Calculate cost differential between company productivity metrics before and after program implementation and compare against associated costs (employee mass transit benefits, CapEx for teleconference equipment/technology, laptops/phones) and saving (decrease in office overhead, such as office space and peripherals)	
		Increase in employee productivity due to reduced work commute, i.e. increase remote work opportunities	ER	Calculate monetary increase by multiplying number of employees by average annual salary and then multiplying by industry standard productivity increase from investment in direct benefits	
		Reduce impact for future disruptions through implementation of reduced travel/commuting programs, technology, infrastructure, operations, and other associated strategies	RM	Calculate estimated reduction in # of disruptions before and after implementation of reduction of travel and commuting multiplied by cost per disruption to achieve avoided cost savings	

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Case Study Findings with Apparel Partners

Case Study: Monetizing Energy Management at EILEEN FISHER

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- NYU Stern CSB collaborated with apparel company EILEEN FISHER to monetize progress on the company's 2015 goal of shifting its transportation mix away from air transport and towards sea and trucking transports
- The monetization analysis explored the decrease in total transportation costs and increase in societal benefit due to a reduction in GHG emissions

Transportation Cost

- Although air is the fastest transportation mode, it is also the most expensive by average unit cost of shipping
- In an effort to reduce transportation costs, from 2015 to 2019, EILEEN FISHER gradually shifted away from air and moved towards sea and trucking transportation modes
- As a result, in 2019, ***the company had spent ~$1.6 million less in transportation costs*** than in 2015

Societal Benefit

- Although EILEEN FISHER has low total GHG emissions, a societal benefit can be generated by reducing the company's GHG footprint
- In addition to higher transportation costs, air freight also produces the most GHG emissions
- From 2015 to 2019, EILEEN FISHER consistently reduced GHG emissions by favoring sea and trucking transportation modes
  - Using $50 per MT CO_2e as the social cost of carbon, ***the company was able to achieve a cumulative societal benefit of ~$150,000*** during this period