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Cover Story: Subway's Journey to Green

Over the last three years, the quick-serve leader's green logistics strategy has cut carbon emissions by 120,000 metric tons and reduced its oil consumption by 277,000 barrels annually—all while growing its number of stores by 12 percent. And they've only just begun...

By Tina Fitzgerald, Director of Produce and Social Accountability, IPC; Tim Brown, Principal, Chainalytics, LLC; and Elizabeth Stewart, Sustainability Director, Subway -- Logistics Management, 4/1/2009

In 2006, Subway decided to put a stake in the ground and become the greenest quick-serve restaurant in the world by taking waste and inefficiency out of the system in four areas: energy efficiency, resource conservation, waste reduction, and food safety. Today, the company is well on its way to achieving this goal—and a green logistics and transportation strategy has played a vital role.

Some of the early numbers speak for themselves: Over the last three years, Subway has reduced carbon emissions by 120,000 metric tons and reduced oil consumption by 277,000 barrels annually while its number of North American store locations grew by 12 percent to 24,262.

The company equates its success to its traditional focus on corporate responsibility; and with customer awareness increasing, Subway formalized its many conservation initiatives into a greater green strategy.

For example, the company's motto, "Eat Fresh," blends nicely into its green vision. Whether procuring produce locally, or baking bread onsite, many of Subway's overarching corporate ideals about freshness also yield the best green approach. Procuring things locally not only brings the freshest product to customers but also requires less transport, less handling, and subsequently less energy.
The company believes that if it succeeds at creating a supply chain with a broader, more localized supplier base, the results will be evident. It's projected that this move to "localize" will cut carbon emissions by 25 percent—an ultimate long-term goal for Subway.

The company is already making great strides. Recently, it convinced Southwest Baking and Otis Spunkmeyer to add bakery production in Arizona, South Carolina, and Texas, reducing shipping costs on its largest, most transportation-intensive product. While it still procures many items from a single source, procuring locally continues to be a key driver of its green mission.

For many firms, moving toward a green operating environment is now a necessity. Recently, President Obama announced plans to initiate Cap and Trade allowing eco-friendly companies to exchange carbon offsets for financial gain with companies over industry limits. This program is already active in Europe while a smaller voluntary version called the Chicago Climate Exchange is now active in the U.S.

For others, green is a way toward improved financial performance and supplier relationships. Wal-Mart recently announced that it would be supplied 100 percent by renewable energy (this includes energy for all operations, including stores) like wind sources and clean vehicles, create zero waste, and sell products that sustain the environment. One trip to Bentonville will show you the range of their commitment. In fact, each parking lot light is powered by an attached wind mill. While these initiatives make a significant impact on the environment, they have also resulted in cost reductions.
The Path to Green

No matter where you are on your journey to green, there's a defined path you'll need to follow in order to arrive at the desired benefits. Here are the steps Subway took to "green" its supply chain along with some helpful tips the company picked up along the way.

1. **Scope your level of "green" strategy.** From the start, Subway decided that sustainability should go beyond reducing its carbon footprint to ultimately contributing zero environmental impact. To achieve this, the company realized that it needed to start with re-thinking logistics and purchasing since the company sources and delivers all the components it sells. In the future, Subway will push further into supplier manufacturing footprints to reduce energy consumption and waste on the components that make up its end products.

   However, for other companies, defining a level of eco-responsibility should be linked to what the organization can realistically measure and execute. For distribution-centric organizations, transportation efficiencies will have the greatest returns on greenhouse gas (GHG) reductions. Why? Because transportation alone accounts for 29 percent of the U.S. carbon output today and a whopping 70 percent of petroleum usage.

2. **Calculating a baseline.** While some companies have the bandwidth and capability to focus on GHG emissions not directly related to energy, in most supply chains, energy consumption is king.

   Limiting your carbon footprint to energy-related GHG emissions shouldn't limit environmental awareness in other areas, but it will make defining your baseline and measuring your success easier. To create a carbon footprint baseline centered on logistics, you need to:

   **Define your footprint.** How far back in the supply chain should emissions be measured? Subway had to consider whether to start with the supplier that sells lettuce, the farmer that grows the lettuce, or the lettuce seed producer. In its initial phase, the company is measuring emissions from suppliers to distribution centers and from distribution to end-stores.

   As baseline results are formalized, it will continue to push farther into raw materials to reduce emissions associated with supply. For production-intensive operations, firms should create a baseline that incorporates energy consumption within the four walls since industrial production contributes 21 percent of GHG.

   **Calculate your energy consumption.** Before considering improvements, you should define your energy consumption and the types of energy you use as different forms of energy release different types of GHG. In Subway's case, it has always been a master at measuring its logistics operations. These key performance indicators (KPIs) on mileage and cube utilization became a good proxy for its fuel consumption.
**Think warehousing.** Various government agencies have surveys that report the average kilowatt hour per square foot. These standards, while not exact, give a good approximation. For a more accurate analysis, firms can use a bottom-up approach by factoring facility kilowatt usage by specific emissions in their state. Don't underestimate the impact energy differentials have on carbon outcomes. The U.S. Department of Energy reports the carbon content of electricity in North Dakota to be 10 times that of Washington State. Determining where to locate operations can have significant carbon implications.

**Calculate transportation.** Calculating a full truckload emission is fairly simple; the government provides estimated mile-per-gallon standards on every make and model of truck on the road today. But challenges exist for more complex networks. Many shippers lack visibility into actual routes when using parcel, air, or LTL and therefore can't account for hub and out-of-route miles.

A robust methodology for "shared" transport emissions doesn't exist today, but firms can use estimates based on research parcel carriers have done. Looking ahead, we believe an activity-based carbon content approach is needed. For now, firms should estimate based on mileage records and continue to work with 3PLs and carriers to improve emissions reporting.

**Investigate different standard methods.** The current GHG protocol seems to have traction as more enterprise accounting systems use it to track emissions in operations. However, with shipping, current protocols don't thoroughly attribute emissions used from carriers back to shippers.

As companies venture beyond their supply chain to suppliers, other initiatives will take suit. This month, the Carbon Disclosure Project (CDP)—a collaboration of institutional investors and corporate giants—is gathering carbon-emissions data directly from suppliers to establish a standard framework for reporting.

**3. Define the structure of your sustainable supply chain.** Once you have a carbon footprint baseline and have defined your standards for measuring GHG, you should create a structure for your sustainable supply chain. Since 2006, Subway's supply chain redesign and operational efficiency has saved more than 9 million truck miles, 1.6 million gallons of diesel fuel and nearly 17,000 shipments per year. You can achieve these benefits by:

**Considering carbon as a cost in strategic decisions.** Similar to capacity or service limits, companies can restrict carbon emissions by defining acceptable network levels. To limit emissions, companies have two choices: A "top down" approach that creates an upper limit on emissions, like reducing GHG 15 percent in three years; or an offset-cost approach that applies an economic value, or social cost, to emissions and treats it like other variables in a cost model. While clearly defined social costs have yet to be widely accepted, research is growing. Companies should run multiple scenarios to determine the impact on capacity, cost, and service.
**Evaluating multiple scenarios.** Incorporating GHG into decision-making doesn't mean optimizing the network around your carbon footprint. Like mitigating risk, you can evaluate the "range of indifference"—or multiple scenarios within a cost range—when making network decisions. Due to Subway's high inventory turns and small warehouse needs, its warehouse emissions varied less than 1 percent across different network configurations.

The company continues to reduce miles by challenging currently held assumptions across its network. Rather than send one pallet of ham from a supplier to 60 distributors, the company created redistribution points (RDC) to consolidate outbound shipments. Now it sources truckloads of ham, consolidates it with other proteins, and sends full truckloads to regional locations.

4. **Incorporate carbon modeling into decision making.** Many companies are already embracing efficiency efforts that are quietly, and perhaps unknowingly, reducing emissions. A green logistics strategy is not a far diversion from the long-held best practices of reducing miles, improving asset utilization, and optimizing service levels. To transform your green strategy into reality, you must manage your supply chain by:

**Collaborating with suppliers.** Subway's green initiative is dependent on supplier improvements. While it doesn't demand quantitative reductions, working together has improved the overall supply chain. One of its most significant carbon reductions came from a realignment of salad packaging. The company's salad packaging supplier moved a facility 1,000 miles closer to its dry redistribution center—annually saving over a million miles and reducing carbon by 1,663 metric tons.

Collaborating in other areas has eliminated logistics waste as well. With an innovative strap, Sysco was able to eliminate shrinkwrap on Subway pallets, thus reducing waste and warehouse handling. To further collaborate, the company has created a supplier scorecard that evaluates supplier sustainability and rewards innovations. One such award was given to Select Product Group for consolidating 900 tissue products down to 12 and improving case configuration for better shipping.

**Altering service levels.** By reevaluating territories, customer policies, and replenishment practices, you can address customers more effectively and reduce emissions within your existing structure.

For example, an electronics device manufacturer originally aligned its service and sales territories so a client wanting product in Arkansas would be served from Texas, even though a distribution center existed only a mile across the river in Tennessee. Changing service areas didn't alter its network, but it greatly reduced costs and emissions.

One of the biggest pitfalls is a failure to granularly apply service policies. Many firms often over-serve customers by assigning blanket performance requirements on all customers when only a few demand them. By identifying customers' individual priorities, you can reduce emissions without cutting necessary service requirements.
**Challenge inventory strategies that detract from sustainability.** One of Subway's most significant carbon reductions came from rethinking how proteins should be produced and distributed.

Working with one of its largest suppliers, the company relocated a cold distribution warehouse directly adjacent to the supplier's processing, slicing, and packing facility, so the product could be produced, packaged, and distributed from the same location. The benefit was a 342,840 reduction in miles annually.

Rethinking traditional practices can shed light on those that promote oil consumption and counter green strategies. It's important to now keep in mind that:

**Lean isn't necessarily green.** Small lot sizes, large inventory turns, and frequent replenishments make up the carbon emission trifecta. While lean practices hold true for waste management, they counter sustainability in the supply chain.

**Inventory and transportation are no longer equal.** Supply chain 101 teaches the equal trade off of inventory and transportation when redesigning a network. That's not true anymore. Maintaining a stocking location is insignificant when compared to the GHG glut of transportation.

**Higher service levels correlate to greater emissions.** Service levels for higher-priced items and online sales typically result in one-off, direct-to-consumer shipments. While these strategies reduce inventory carrying costs, emissions don't follow suit.

**Offshore manufacturing extends the supply chain.** Manufacturing offshore means product will be moving over longer distances—not just across the ocean, but also cross-country from the port.

5. **Take advantage of transportation's two shades of green.** Transportation may be the easiest "greening" your company achieves. Most, if not all, green initiatives in transportation result in significant cost savings, and many tried and true philosophies have been reducing GHG since the emergence of supply chain management.

The link here is obvious: reducing fuel cuts costs and emissions—the two shades of green. ARC Advisory Group recently reported that reducing transport emissions is the "top" green initiative currently being undertaken. To execute a newfound green strategy, transportation managers should:

**Consider Smartway partnerships.** At press time, 1,250 carriers have joined Smartway. The rigorous testing of these carriers yields significant reductions in emissions. Smartway vehicles are 20 percent more efficient than a long-haul one. Subway's partner, CH Robinson, has received Smartway's highest score for environmental performance. And companies like Wal-Mart, Tyson, and Nike have already become Smartway partners—guaranteeing more than half of their shipments will be delivered by Smartway carriers.
While Chainalytics found that using only Smartway carriers might increase costs 2 percent to 5 percent, using Smartway carriers in heavily trafficked lanes has resulted in reduced costs. We expect the cost differential to dissipate as more regional carriers join to broaden coverage.

**Evaluate modal conversions.** Converting truckload to intermodal can reduce fuel consumption 13 percent. Other modal conversions, like air-to-ground, ground-to-rail, or even multi-stop, can greatly reduce fuel as well. Overseas manufacturers have reduced emissions by switching to intermodal or box car from ports. Many can improve their modal mix by reconsidering existing service standards and the resulting expedited shipments.

**Optimal load building.** Most firms have software to better plan loads and routes, but improvements can always be made. Subway teams with transportation suppliers to factor carbon emissions into transportation planning. By sharing warehousing space with other food service companies, the company consolidates inbound and outbound shipments to improve utilization and reduce miles.

**What's Ahead on the Journey?**

Subway continues to evaluate the strategic placement of new facilities by pairing environmental impacts with financial savings. This month, the company will open a new dry redistribution center in Indianapolis, saving an additional 597,000 miles a year.

It continues to formalize its programs and work with groups like the Produce Marketing Association and Conserve, the National Restaurant Association's environmental initiative focused on sustainability. In the future, Subway will tackle the deepest parts of its supply chain with product life cycle assessments to help suppliers measure and reduce their footprints, as well as tracking and improving Eco store energy and water savings.

Ultimately, Subway will expand its carbon footprint goal to include quantitative parameters that extend from the grower to store locations to know how much of a footprint the company's footlongs really have.

| Carbon emission cut in three years: | 120,000 metric tons |
| Annual reduction in oil consumption across all SC initiatives: | 277,000 barrels |
| Truck miles saved: | 9.3 million |
| Gallons of diesel saved in distribution & logistics: | 1.6 million |
| Annual shipments saved: | 16,653 |
| Gallons of water saved annually from low-flow sink aerators: | 41 million |
| Gallons of water saved using recycled materials in napkin production: | 60.5 million |
| Trees saved annually using 100% recycled materials in napkin production: | 147,000 |
Subway's significant savings

A green logistics strategy is not far from long-held best practices: reduce miles, improve asset utilization, and optimize service levels. Here are some ways Subway racked up savings thinking green.

- **Reducing miles.** Rather than send one pallet of ham from a supplier to 60 distributors, Subway created redistribution points (RDC) to consolidate outbound shipments. Now it sources truckloads of ham, consolidates it with other proteins, and sends full truckloads to regional locations.

- **Supplier collaboration.** One of Subway's most significant carbon reductions came from a realignment of salad packaging. Its salad packaging supplier moved a facility 1,000 miles closer to Subway's dry redistribution center—annually saving over a million miles and reducing carbon by 1,663 metric tons. Collaborating in other areas has eliminated logistics waste too. With an innovative strap, Sysco was able to eliminate shrink-wrap on Subway pallets, reducing waste and warehouse handling.

- **Rethink inventory strategies.** Subway reaped significant carbon reductions when it challenged the way that proteins were produced and distributed. Working with one of its largest suppliers, Subway relocated a cold distribution warehouse directly adjacent to the supplier's processing, slicing, and packing facility. Now the product could be produced, packaged, and distributed from the same location. The benefit? A 342,840 reduction in miles annually.