

solutions

From Shop Floor to Top Floor:

Best Business Practices

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in **Energy Efficiency**

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by

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ICF INTERNATIONAL



PEW CENTER

ON

Global CLIMATE CHANGE

CASE STUDY

PepsiCo Supply Chain	
Headquarters:	Purchase, NY
CEO:	Indra K. Nooyi
Revenues (2008):	\$43.25 billion
Energy Costs (2007):	\$1.1 billion
Energy Savings Target:	<p>Company-wide targets are for 2015 using a 2006 baseline:</p> <ul style="list-style-type: none"> • Electricity—20 percent • Fuel—25 percent • Water—20 percent
Key Efficiency Strategy Successes:	<ul style="list-style-type: none"> • Reducing carbon dioxide (CO₂) emissions per unit of production 4.5 percent over the two-year period covering 2006–2008, avoiding 170,000 metric tons of CO₂ equivalents, and saving about \$100 million in avoided costs. Since inception of its energy efficiency program in 1999, Frito-Lay manufacturing has cut energy intensity by 36 percent; • Using energy efficiency goals to drive innovation in reducing other resource consumption, especially water, and in improving productivity across many facets of company and supplier operations; • Engaging major suppliers in performance measurement system, goal setting, resource conservation and other sustainability initiatives; • Utilizing lifecycle carbon footprint analyses of products to drive both energy efficiency goals and supply chain engagement.

PepsiCo Overview

Sustainability leaders at PepsiCo have known conceptually for some time that the company's supply chain energy and carbon footprint was large. But their initial energy and carbon efforts were almost all internally focused—partly because internal operations are the easiest to measure and to affect, and partly because they felt it was necessary first to demonstrate the company's commitment to environmental sustainability before asking suppliers for similar efforts.

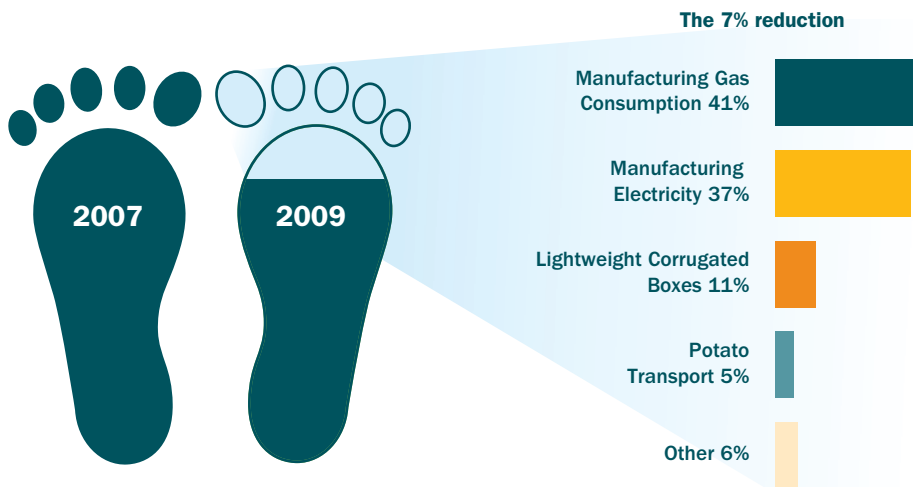
As is true for most companies, energy is not a big cost factor for PepsiCo, accounting for less than three percent of revenues. What has made energy a priority driving innovation across the organization is that it accounts for most of the company's enterprise carbon footprint. As revealed by PepsiCo's carbon footprint analyses, energy use

shifted from a minor operating cost to a major environmental focus. And because energy is a pervasive supply element throughout the company, looking for energy efficiency improvements has paid large dividends by uncovering a wealth of productivity, operational improvement, and other innovations that produce returns far beyond just cost savings.

As the company's efforts to determine its product-level carbon footprint progressed, it quickly became apparent that the majority of PepsiCo's footprint falls outside its own operations, primarily in its upstream supply chains. This was first demonstrated in 2005 when, in partnership with the University of Bath and the Carbon Trust, PepsiCo UK and Ireland completed the Walkers Crisps carbon footprint analysis—PepsiCo's first detailed, life-cycle assessment-style analysis of a product from field to store, to post-consumer. The study showed that only about 30 percent of the Walkers product carbon footprint came from the manufacturing. In 2007, Walkers and the Carbon Trust published the results of a much-updated assessment on product packaging; the world's first on-pack use of the Carbon Trust Reduction Label. In 2009, Walkers became the first brand to meet the reduction commitment, having driven a seven percent reduction in lifecycle carbon emissions per pack. **Figure 1** is a breakdown of the seven percent per pack emissions reduction.

Figure 1

Walkers Crisps' Lifecycle **Carbon Footprint Analysis**



Recreated from image provided courtesy PepsiCo (2009).

As the company ramped up its supply-chain focus in response to this realization, it faced two key issues: (1) PepsiCo needed to demonstrate its ability to reduce its internal operations footprint, both to be credible and to offer concrete solutions to its suppliers; and (2) the company needed to broaden its resource focus beyond energy, especially to include water. Fortunately, the company had built a strong core of energy efficiency expertise, especially in the Frito Lay snack food operations.

The Energy-Water Connection

Like energy, water is not a big cost issue for PepsiCo companies, but it is a critical supply chain issue. It is not hard to grasp that a large percentage of the beverage brands' makeup is water; but the food products also use large amounts of water, in crop irrigation, washing, cooking, and other processing steps. Energy and water are linked in another sense by the fact that the company, and its water utility suppliers, use lots of energy to pump, purify, heat, and clean the water that flows through its many operations.

Water availability is a very real and present challenge for some PepsiCo operations, where drought or other conditions limit supplies. As one company employee puts it: "no water, no product." For example, the recent southeastern U.S. drought led Georgia's Governor to call for a 10 percent reduction in water use. This forced the Atlanta Gatorade plant to focus on reducing water use, which also spurred energy efficiency improvements. Some of the steps taken by the Atlanta plant include the introduction of dry lubrication of bottle conveyors and elimination of in-line post fill bottle washers. In addition, the plant established green teams to flag wasteful practices, and held daily plant floor resource use review meetings. Today, that plant is used as a best-practices teaching example companywide. And there can be larger political water-related risks: in some countries, keeping a license to operate for a company like PepsiCo can depend on demonstrating stewardship of local resources.

The Southeastern drought points out another water-energy nexus: because electric power plants draw their cooling water from the same watersheds that serve agricultural and industrial needs, every kilowatt hour saved through electric efficiency reduces cooling water withdrawals. And every gallon of water saved at the Gatorade plant reduces the energy needed for pumping, cooking and other uses, so the efficiency efforts are symbiotic.

Energy and water also each bear significant climate change risks for PepsiCo. The company expects energy costs to rise with carbon prices and fossil fuel depletion, and is already seeing climate-related chronic drought affect its supply chain in several parts of the globe. Reducing energy use in this context is both a cost reduction and a climate mitigation strategy, and water efficiency reduces costs while supporting PepsiCo's climate adaptation strategy.

PepsiCo also views energy, water and related sustainability performance indicators as reputational issues. Especially during economic downturns, sales of the beverages and snack foods PepsiCo sells can suffer along with other discretionary purchases. Anything the company can do to demonstrate its sustainability and corporate responsibility commitments can help maintain customer loyalty.

Building the Core Efficiency Strategy in Internal Operations

PepsiCo's energy and water efficiency efforts date back to the early 1990s, at Frito-Lay, when volunteer Green Teams began. While these efforts were initially driven by environmental compliance, once they opened the lid on the operational and technology issues, Green Teams found themselves digging into ideas for reducing costs and otherwise "greening up" company operations. In 1999, these efforts were formalized into the Frito-Lay Energy Department, and later became a model for the PepsiCo corporation-wide effort.

Then-CEO Steve Reinemund organized the Sustainability Task Force in 2004 as PepsiCo's global organization. The Environmental Sustainability Leadership Team (ESLT) has since been formalized to focus primarily on water, energy and packaging issues.¹ The ESLT's biggest initial challenges included:

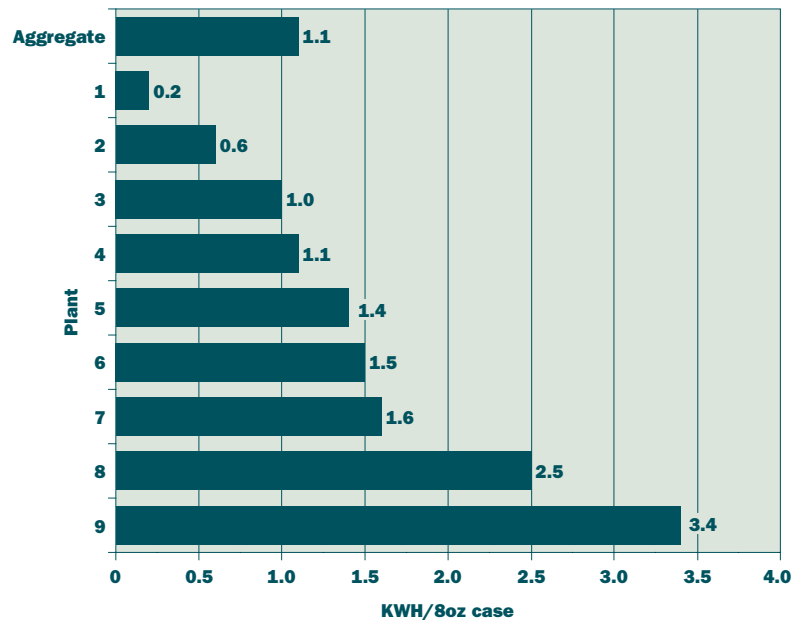
1. What metrics to track;
2. How best to measure them; and
3. What performance targets to set.

Leaders also realized that while their supply chain was the ultimate target for their sustainability efforts, they first had to establish reporting, targeting, and best-practice technology and operations internally, both to show PepsiCo's leadership commitment, and to develop the practical tools they would need to offer suppliers.

Targets and Measurement

Developing an enterprise-wide system for tracking and reporting energy, water, and other key indicator data was a core element of the sustainability program. After years of effort, the company's Measure Up tracking and reporting system developed into an online platform for company facilities as well as selected suppliers to report data and retrieve information. The Measure Up system can generate and show numerous report types for individual plants as well as higher aggregations. **Figure 2** is an example of one of the higher-level aggregations produced by the

¹ While raw materials and manufacturing account for the great majority of the product footprint, packaging accounts for more than 10 percent of the total, and is also very visible to the consumer, especially as a disposal/recycling issue.

Figure 2**PepsiCo's 'Measure Up' Energy Performance****Tracking System**

Recreated from image provided courtesy of PepsiCo (2009).

Measure Up system. It shows energy performance (on a kilowatt hour per package basis) for nine different plants that all produce similar products. Note the significant disparity in energy performance among the plants; the system allows managers to quickly identify this disparity and take necessary corrective action.

The sustainability team did not shy away from goal-setting. They embraced the challenge, terming the targets Big Hairy Audacious

Goals (known as BHAGs; this concept came from the James Collins book *Built to Last*²). BHAGs were partly based on experience from Frito-Lay's efforts and other limited analyses, but were intentionally set as stretch goals, meaning that not every step needed to reach them was known in advance. PepsiCo leadership believed that setting "stretch" goals like this was important to force creativity and innovation across the company, as *Built to Last* and other books in the corporate-excellence literature suggest. Company-wide reduction targets were set for 2015 using a 2006 baseline:

- Electricity—20 percent
- Fuel—25 percent
- Water—20 percent

² Collins, James. 2004. *Built to Last: Successful Habits of Visionary Companies*. HarperBusiness.

So far, PepsiCo has made significant progress toward these goals, racking up more than \$60 million in savings since 2000, realizing better than a 20 percent internal rate of return. Examples of energy saving steps taken include:

- **Tortilla chip baking.** In Frito-Lay's tortilla chip baking operation, the company started by installing damper draft controls on the ovens. This not only reduced heat loss, it also improved the evenness of heat distribution, which improved the quality of the chips. The sustainability team then added heat recovery technology, further reducing energy use, and also increasing total throughput. So energy efficiency not only reduced costs, but also improved product quality and total production. In the past, production staff focused only on production and quality, and with energy staff not engaged in the process, efficiency was assumed to compromise these key goals. But since setting company-wide energy and water savings goals, production staff were forced to look at these resources across their operations. The result has been a reversal of the past pattern; energy/water efficiency is helping drive production and quality improvements.
- **Total energy and water strategies.** At the company's Casa Grande, AZ facility, the first-generation sustainability action was to treat wastewater and apply it to adjoining croplands to grow alfalfa. The next wave is to upgrade treatment to the point that water can be reused for plant supplies, freeing up the cropland for higher-value use in the form of renewable energy production. In a dry climate like Arizona, water supply is not only expensive, it is uncertain in the face of long-term drought and continued development. So this multi-wave strategy went far beyond cost reduction; it helped reduce supply risks for water and energy.

Financing Efficiency and Other Sustainability Projects

PepsiCo takes an innovative approach to quantifying and funding energy and water efficiency projects. It applies a basic payback criterion as a standard method. But beyond that, the company applies other filters to project evaluation processes to support energy and water sustainability efforts:

- Two percent of the company's capital budget is targeted to a Sustainability Investment Fund (SIF), creating a defined source of funds for sustainability projects. Projects funded by the SIF include a "waste-to-value" project in Turkey that converts organic waste to fertilizer and biogas, leading to 1,350 megawatt hours (MWH) of electricity generation and 550 MWH of heat recovery per year.

- Every PepsiCo investment project of \$5 million or greater is subject to a sustainability screening, which evaluates whether the project contributes to or inhibits progress toward sustainability goals. This screen catches projects with attractive conventional returns but significant environmental risks before they move forward, and can lead to project modifications that incorporate energy and water efficiency features.
- PepsiCo takes risk assessment into account in its sustainability investments. Where projects reduce risk of production interruption, be it from water supply shortages or equipment failure, those factors will advantage a project. As the company has gone through rounds of project implementation and best-practice sharing, it has gained a growing understanding of how energy and water efficiency improvements boost total productivity, and hedge against future energy and water price or supply problems.

Thinking Outside the Energy Box

PepsiCo sustainability team members report that one of the biggest breakthroughs in developing and then working to implement the sustainability goals was to “think outside the energy box.” In the “old days,” energy management in many companies, PepsiCo included, was a narrow set of efforts focused only on equipment or systems that were solely seen as providing energy for plant or building operations: boilers to produce steam or hot water, lighting systems, cooling equipment, etc. The task for energy managers in the old days was to make those energy systems efficient, on an incremental basis, but to leave other aspects of plant operations alone. So, for example, the boiler operator’s job was to tune up the boiler, insulate steam pipes, maintain steam traps, but first and foremost to deliver steam to the process at the volume, temperature and pressure required.

In the “old days,” energy managers typically were not allowed to look outside energy systems into production processes or other core operations. But in PepsiCo’s case, the aggressiveness of its BHAG targets quickly led the sustainability team to realize that they could not reach the goals without “touching the process,” or reassessing the entire range of resource, technology, and operational aspects. Once the team understood this, “thinking outside the energy box” became an accepted norm.

Getting out of the energy box led the sustainability teams to ask more fundamental questions, like: “do we really need that much steam, at that high a temperature and pressure, to cook the product?” This is an expanded mindset that looks first at the intended outcome of the job, and then seeks to identify the most resource-efficient



way to accomplish it. This “paradigm shift” has been recognized by leading energy efficiency strategists as key to changing energy efficiency strategies from small, incremental efforts to large, transformative forces that drive change across the organization.³ In this new paradigm, energy managers ask not “how much can we save?” but rather “what’s the minimum energy needed to accomplish this job?”

In PepsiCo’s case, this new approach led to larger and more game-changing solutions than would have occurred in the old incremental-energy-savings mindset: for example, when asked what it takes to cook corn for a particular product, Frito-Lay staff found that the job could be done with 30 percent less water and 45 percent less energy, saving money through reduced energy and chemical costs needed to treat wastewater. This approach has spread across the company, driving much greater savings than would have occurred if the older, narrower view of energy efficiency had prevailed.

To support this kind of thinking, PepsiCo has held sustainability summits, including a 2009 event that brought some 400 employees from 14 countries to Chicago for four days. Workshops were held on all manner of topics, from heat recovery to water recycling, with both internal engineering staff and selected outside experts leading the workshops. This process, known in the company as “plants teaching plants,” leans heavily on peer interaction. Using both in-person meetings like the summits as well as conference call/webinars, electronic forums, and internal project databases, the ESLT has been able to engage large numbers of people across the various business units.

Moving the Energy Efficiency Strategy Out to Suppliers

PepsiCo has taken the Walkers life cycle analysis model to other branded products. When Neil Campbell, whose division commissioned the Walkers study, moved to Tropicana in 2008, he launched a similar study of Tropicana orange juice, with company staff working again in partnership with the Carbon Trust. After a few rounds of analysis, staff were surprised at the size of the orange-growing share of the footprint, based largely on the natural gas used in producing the fertilizer for the trees. In 2009, PepsiCo began publishing carbon footprint numbers on its website for Tropicana orange juice.

Like other leading companies pushing the envelope of carbon footprinting and reporting, PepsiCo admits to the challenges as well as the opportunities in getting the numbers right, and in making them meaningful. Director of Environmental Sustainability David Walker said in the spring of 2009:

³ Global Business Network. “Energy Strategy for the Road Ahead: Scenario Thinking for Business Executives and Corporate Boards.” EPA. 2007. Available at: http://www.energystar.gov/ia/business/GBN_Energy_Strategy.pdf.

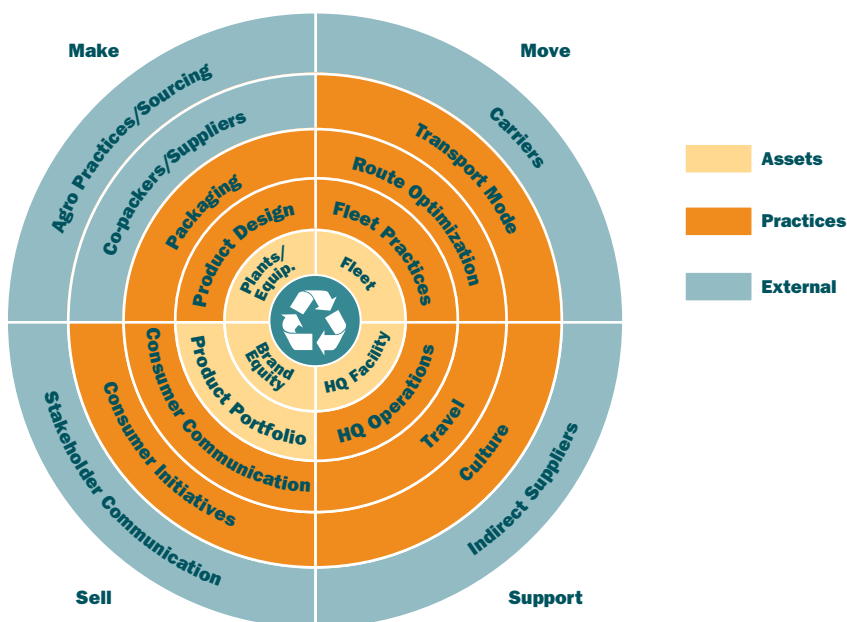
“...measuring footprints at the product level presents a number of challenges....Product level data can be difficult and expensive to gather, with secondary data potentially leading to inaccurate results. When faced with these obstacles, companies can easily shy away from undertaking this type of research.

But product level footprinting sparks a potent combination of sustainability gains, financial returns and innovation. Efforts to establish the carbon footprint of a basket of products representative of a company’s business can help tailor sustainability strategies more effectively while generating awareness among peers, employees and consumers about the significance of carbon reduction efforts.”

Building on the Walkers and Tropicana individual-product footprinting efforts, PepsiCo has devoted substantial time and resources to understanding the sustainability of its entire supply chain. **Figure 3** illustrates the sophistication that has gone into characterizing and affecting the supply chain. Breaking its influence into four quadrants—manufacturing (the “Make” quadrant), shipping (the “Move” quadrant), marketing (the “Sell” quadrant), and the support quadrant—PepsiCo further distinguishes between assets (where it can make direct operational

Figure 3

Scope of PepsiCo’s **Sustainability Strategy**



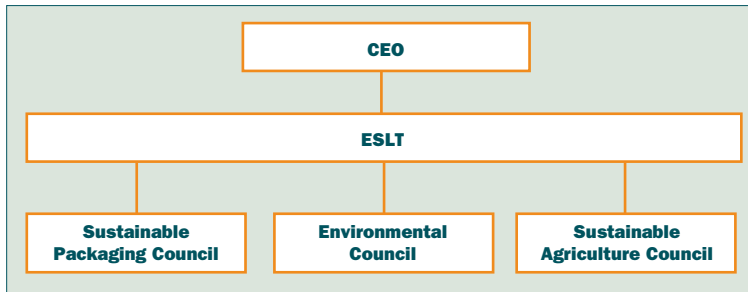
Recreated based on image provided courtesy of PepsiCo (2009).

changes and technology investments), practices (where it can exert a mix of direct and indirect influences), and external elements (where PepsiCo's influence must be indirect). This taxonomy produces 20 potential areas of focus for the sustainability team.

Given the complexity of its operations and the multiple dimensions of its sustainability program, PepsiCo embedded its energy efficiency strategy within its ESLT, the structure of which is illustrated in **Figure 4**. The ESLT and three councils are staffed by personnel within the business units. Each group has members from all of the business units, making them a place for collaboration and best practice sharing.

Figure 4

PepsiCo's Environmental Sustainability **Leadership Team**



Recreated based on image provided courtesy of PepsiCo (2009).

The ESLT is chartered by and responsible to PepsiCo's Chairman, CEO and Executive Committee. It is specifically tasked with:

1. Developing and maintaining PepsiCo's environmental sustainability strategy;
2. Developing goals and timelines consistent with the environmental sustainability strategy;
3. Enabling strategy execution through resource commitment, accountability, and cross-division collaboration;
4. Developing, administering, and maintaining PepsiCo wide environmental sustainability policies;
5. Assessing the gaps and strengths of performance relative to the company's aspirations and external benchmarks;

6. Partnering with human and talent sustainability leadership teams to assure comprehensive corporate social representation for PepsiCo;
7. Advising and informing the Chairman and CEO, the PepsiCo Executive Committee and the Board of Directors on matters of environmental sustainability.

The energy efficiency strategy operates within the ESLT structure. Because the Frito-Lay energy efficiency efforts date back to at least 1999, the energy efficiency strategy has helped shape the other aspects of ESLT's program plan and operations. Reporting and dashboard systems, technical assistance methods, and other elements developed for energy efficiency purposes have in many cases been expanded to support water, packaging, agriculture and other dimensions of the ESLT portfolio.

Bringing the Supply Chain Inside the Sustainability Program

PepsiCo has begun bringing its efficiency strategy full circle: building on its initial 1990s efficiency efforts at Frito-Lay, it has taken these successes company-wide through various channels and organizational moves, and more recently has been integrating bottlers and some suppliers into its performance measurement and goal setting systems. Like many global companies, PepsiCo uses contract manufacturers, or "co-packers," for several products. Because their operations are typically similar to PepsiCo's internal operations, the sustainability team found it both important and attainable to gain co-packers' active involvement. The supplier initiative built on Frito-Lay's Resource Conservation Model (RECON), which evolved in the 10 years since Frito-Lay pioneered PepsiCo's energy efficiency efforts beginning in 1999. RECON comprises several elements:

- Data collection on a weekly basis from utility meters, and from internal submetering of specific systems or equipment where available;
- Data reporting on current and Year Ago (YAG) energy performance;
- Benchmarking performance against goals, which are set as a percentage of YAG energy use;
- Data analysis tools that allow energy usage breakdowns by individual end uses;
- Diagnostic tools for all major energy systems that can detect performance problems and identify efficiency opportunities.

PepsiCo's sustainability team supports the RECON system with suppliers by:

- Providing onsite technical assistance at supplier sites;
- Inviting suppliers to the Sustainability Summit;
- Conducting targeted training events;
- Providing ongoing staff assistance and networking support via telephone and email.

The company has also begun to include selected suppliers in its online RECON system. To make the RECON approach more user-friendly for these suppliers, PepsiCo developed a reporting and dashboard framework that summarizes results and progress toward goals. This framework includes both quantitative and qualitative goals. On the quantitative side, participating co-packers are asked to achieve four percent annual reductions in energy and water usage. This approach makes participating suppliers “virtually” part of the PepsiCo effort, and enables the company to measure their performance right alongside its own business units.

On the qualitative side, suppliers are given “green” ratings for taking a defined set of qualitative steps. Each step has an individual rating, but to achieve the overall green rating, the suppliers need to be green on each of the steps. These include:



- Measure and track energy, water use and solid waste metrics weekly and agree to make these metrics available to PepsiCo upon request;
- Make an upper management commitment, identifying resources available at the corporate and site level. Build resource conservation teams and increase awareness, driving results through a balanced approach using teams, processes and technology;
- Develop and implement annual and long-term goals, integrating these goals into the business plan;
- Perform regular assessments of energy and water users at each site. Schedule a free Department of Energy Industrial Assessment Center energy audit with the nearest assessment center to be completed within one year of joining the outreach program if available;
- Complete the SEDEX (Supplier Ethical Data Exchange) self-assessment questionnaire;
- Agree to take full advantage of governmental and nongovernmental resources in support of sustainability. For example, U.S. companies are encouraged to join ENERGY STAR;

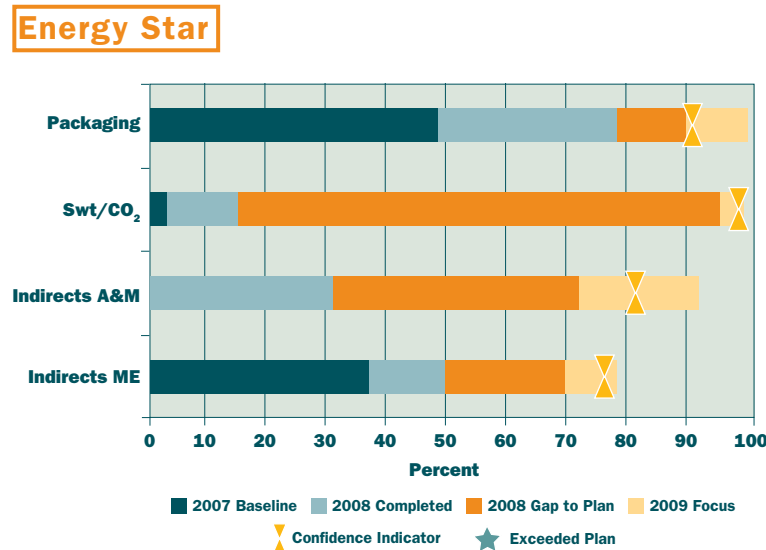


- Work diligently to implement these objectives within 12 months of joining the program.

From the suppliers' perspective, the incentive to participate in these programs is the opportunity to maintain good relations with a major customer. For its part, PepsiCo makes it easier for suppliers to pursue environmental sustainability by making its reporting system user friendly, facilitating peer-to-peer technical assistance, and using third party programs like ENERGY STAR, which give companies a lot of help and tools to improve energy efficiency. “

Results in the ENERGY STAR area for the fourth quarter of 2008 are summarized below. This Outreach Implementation Scorecard is the graphical representation of the company's supplier reporting system. **Figure 5** shows the percentage of PepsiCo suppliers in each area that has joined the EPA's ENERGY STAR program as a partner.⁴ The dark blue bar is the percentage of companies that joined in 2007, the light blue bar is the incremental percentage that joined in 2008, the orange bar represents the gap between the actual participation rate versus the participation goal PepsiCo set for itself for 2008, while the light orange bar is the cumulative participation goal for 2009. The “confidence indicators” signify the level of supplier participation PepsiCo believes will be achieved by the end of the year.

Figure 5
PepsiCo's Implementation Outreach Scorecard:



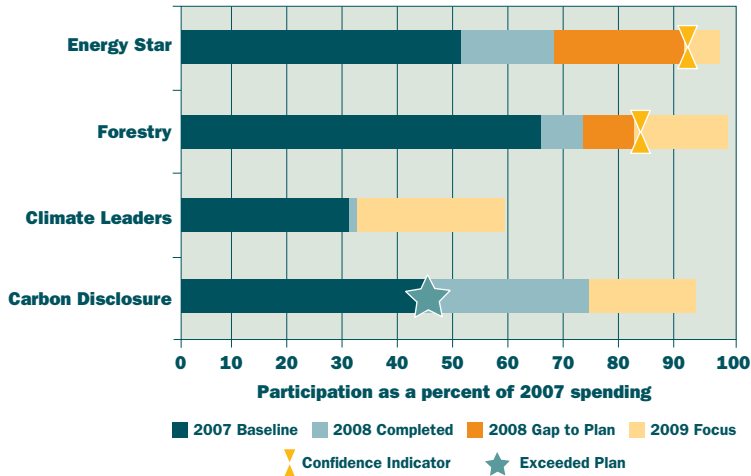
Recreated based on image provided courtesy of PepsiCo (2009).

⁴ Along the y-axis, the label “Swt/CO₂” refers to sweeteners (like sugar and zero calorie sweeteners) and CO₂ suppliers. “Indirects/A&M” refers to indirect suppliers, such as office supplies and energy, while A&M stands for advertising and media. “Indirects/ME” is a specific indirect category for manufacturing equipment.

Progress toward the

qualitative goals is further illustrated in the Outreach Implementation Scorecard in **Figure 6**. It shows the percentage of PepsiCo spending on packaging suppliers involved with the ENERGY STAR, Sustainable Forestry, Climate Leaders and Carbon Disclosure Project initiatives. The dark blue bar represents the 2007 baseline spending amount, light blue is



Figure 6**PepsiCo's Implementation Outreach Scorecard:****Packaging**

Recreated based on image provided courtesy of PepsiCo (2009).

2008 incremental spending, orange shows the gap between the PepsiCo 2008 goal versus actual spending, and light orange is the goal for 2009.

In 2009, the company's qualitative goal is to get to a 75 percent "green" rating for its suppliers on the Outreach Implementation Scorecard.

Highlights of PepsiCo's supplier efforts include:

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- The program has identified more than \$6 million in energy and water related productivity improvements;
- 75 suppliers have joined the ENERGY STAR program, a fact noted in PepsiCo's 2009 Partner of the Year Award;
- 18 major copackers are engaged in the program;
- Key supplier success stories include:

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- A major Frito-Lay copacker realized better than 95 percent attainment of its 10-year goals to reduce fuel consumption by 20 percent, electricity by 22 percent, and water use by 30 percent. Copackers have achieved over \$2 million in combined savings from energy and water efficiency in 2009;
- Another copacker hosted RECON trainings that led to a companywide rollout of the program, a BHAG of 40 percent reduction in energy/water use, and \$1.1 million in productivity improvements.

Like many corporate energy and sustainability initiatives, PepsiCo's effort met with its share of initial resistance. Additional reporting requirements added to workloads; goal setting required another set of priorities to be factored into busy people's schedules. And like most manufacturing operations, there was skepticism about the value of the energy focus, as it was seen as a minor cost item in most places.

Yet like other companies in these case studies, PepsiCo has been surprised by the resonance its efforts generated among most of the people it engaged. They discovered that the energy and water effort helped spread a sense that "we are innovating, we are rethinking how we do our business, we are looking deeper at the details of our operations and costs." It is that ethic that seems to drive an "esprit de corps" around the sustainability goals, which in turn drives a larger wave of productivity, and a more positive sense of PepsiCo's human capital. As this process unfolds, the sustainability team is seeing that the combination of external reputational value with internal innovation and morale improvement is worth the effort, beyond the narrower benefits that can be quantified as saved kilowatts of energy or gallons of water.

Success is not without its own issues, of course. Sustainability staff are finding new challenges as the effort broadens and matures. These include:

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 • **Complacency with results.** It can be tempting to point to successes and cut back on the pressure to keep going. To meet the 2015 goals, PepsiCo has to maintain high performance in all areas while developing new opportunities. Sometimes the second wave of improvements can be harder to implement, as the "low-hanging fruit" has already been harvested. And in some cases, the "low-hanging fruit" grows again if teams fail to focus on the fundamentals of maintaining a proper resource conservation process with a capable team.
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 • **Expense cutting.** Even in a stable economy, most managers feel pressure to reduce expenses related to "managing" ongoing programs. In today's economy, maintaining operational excellence with fewer resources for making site visits, holding meetings, or other activities is very challenging.
- **Consistency of vision.** As energy conservation and sustainability become "mainstream" topics in the organization, several different points of view and directional strategies start to emerge. When the energy and water effort was smaller and limited to one business unit, maintaining focus was easier. But with diversity comes complexity, and keeping focus on the core energy and water goals, and the actions that support them, becomes more of a challenge.

Recognizing these challenges, the ESLT has been reviewing goals and results for all of its performance indicators, and revisiting its forward-looking aspirations in the process. This is helping to move past any sense of complacency as the team contemplates new and aggressive goals across a broad spectrum of indicators. The situation nonetheless remains challenging in a corporate environment with limited capacity for additional resources, and there is continuing pressure to “do more with less.”

Conclusions

PepsiCo's efficiency strategy exemplifies the path energy efficiency has followed in the corporate world, from a discrete cost management issue to a major carbon footprint reduction issue that cuts across business units and operations. In the process, the efficiency effort has brought water and other key resources along with it into the sustainability performance measurement system. As one of the first companies to perform a rigorous third-party, life-cycle carbon footprint assessment of an entire product, PepsiCo was able to quantify the notion that energy was a major part of its internal footprint. More importantly, the assessment showed that PepsiCo's supply chain accounted for more of its footprint than did its own operations. That realization drove the company first to share its more than ten years of efficiency experience with key suppliers, and then to bring selected suppliers into its performance measurement system.

PepsiCo's efficiency strategy has also helped to change the mindset and culture in which energy management happens. Setting up a company-wide structure and setting aggressive BHAGs for all business units forced plant managers to look outside energy systems, where energy managers traditionally were confined, into production processes and other core operations. The aggressiveness of the BHAGs meant that facilities could not reach the goals without “touching the process,” looking at all resource, technology, and operational aspects. This helped make “thinking outside the energy box” an accepted norm.

Key lessons learned from PepsiCo's energy efficiency successes include:

- Setting challenging goals as a rallying point is important. It is okay not to know exactly how the goals will be achieved. In fact, if you know exactly how to get there, it probably means that the goal is not challenging enough.
- Audacious energy efficiency goals can drive progress in other areas of the business. PepsiCo found that setting stretch goals on energy forced company staff to “think outside the energy box,” and led to process and product quality improvements.

- Understand the linkages between energy and water and pursue strategies that maximize efficient use of both resources. Like energy, water is not a high cost item for PepsiCo, but potential supply disruptions pose a significant threat to the company. Water saving measures will also often have many of the same cost, innovation, and reputational benefits as energy efficiency measures.
- Extend your energy efficiency efforts out to your suppliers, but make sure you provide them with the tools and resources to be successful. Leverage third-party programs like ENERGY STAR to provide additional technical assistance to suppliers.
- Looking at investment in energy conservation projects in a different way from normal business investments is important. Longer project life and more reliable long-term savings should allow for longer returns on capital. The relative lack of risk involved in energy conservation projects make them good bets.

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