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The high-profit supply chain
A resource-focused approach

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Reducing costs to release cash to the business is an ongoing pursuit of organizations regardless of competitive or macro-economic conditions. While many organizations have traditionally focused on their internal operations for cost reduction initiatives, this alone may not address one of the most significant savings opportunities for an organization—its upstream and downstream supply chain. Many organizations have long recognized cost benefits can be realized by asking suppliers to reduce the cost of their operations. Leading organizations, however, are going even further in the pursuit of untapped savings by re-looking at their supply chain and focusing on reducing use and production of five metrics that are ubiquitous within it—energy, carbon, water, materials and waste. Is your company leaving money on the table?

Why energy, carbon, water, materials and waste?

A primary reason for looking at these five resource metrics is simple. They are ubiquitous throughout the entire supply chain, and they are, therefore, an excellent proxy for operational efficiency. Energy is often expensive to use; carbon, in the form of emissions, represents profits gone up in smoke; water and materials are becoming expensive due to scarcity and commodity inflation; and waste is, well, wasted profit.

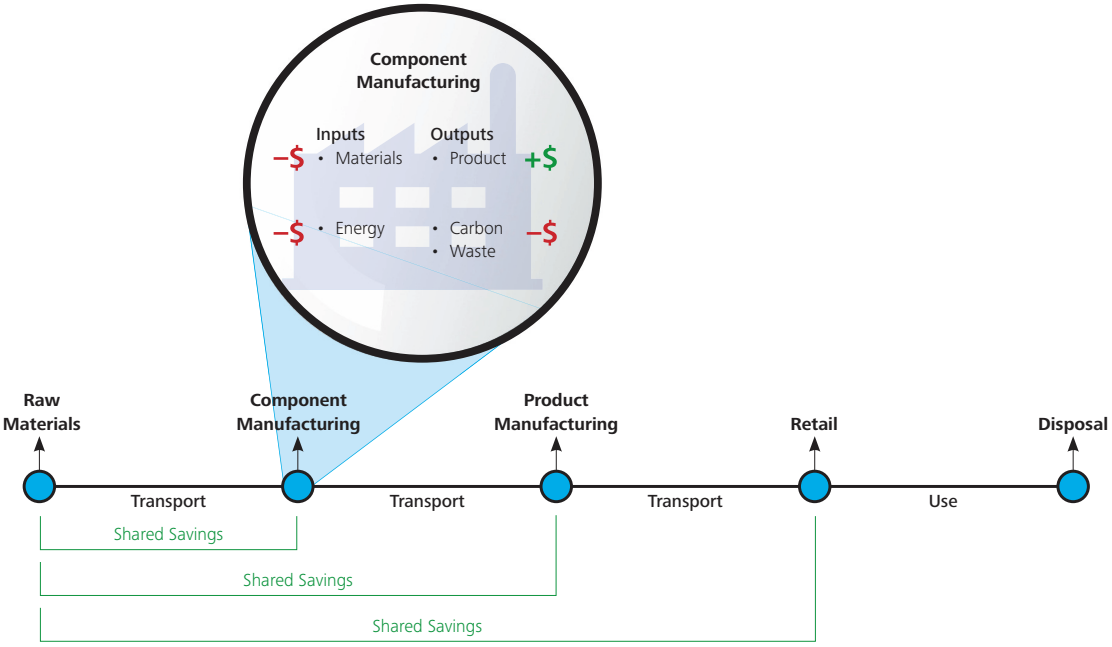
Leading companies recognize that as supply chains are being optimized, these five resource metrics must be examined. Projects that reduce energy, carbon, water, materials and waste represent some of the easiest ways to remove significant cost; they typically have rapid payback periods and they can be among the lowest risk projects a company can undertake. These resource metrics are often similar to what organizations look at when examining environmental sustainability. But make no mistake, many view managing these resources in the supply chain the same way they look at any other game-changing business opportunities that force them to think differently about their operations. These organizations realize if their supply chain uses too much energy, or if it uses too much water or materials, or if it produces too much carbon or waste, then they are spending too much money. And that extra expense is being passed onto their product cost.

Supply chain inputs and outputs

What exactly does a resource-focused approach mean in the context of a supply chain? As shown in Figure 1, there are two inputs that go into the supply chain process of every upstream supplier—materials and energy, and there are two things that come out—one is product and one is non-product. Three of these streams cost the supplier money and only one makes the supplier money. This is the case up and down the supply chain, whether you look at raw materials at the beginning of the supply chain or go all the way through to end of life beyond the retail side of the supply chain. Companies along the supply chain might use different materials, different amounts of energy and produce different components or products, but the unfavorable ratio is the same—three expense streams for every one revenue stream.

Broaden this concept as holistically as possible to think about the size and scale of your own supply chain. Think about the entire value chain of a product and the materials that go into it; the energy and waste material within the manufacturing process; the retail disposal and all the transportation to move materials and finished products. Put all of this into the equation and you can begin to see all the dollar signs that pop up in all the nodes along the supply chain. Apply the five resource metrics – energy, carbon, water, materials and waste – into this context to learn where these dollars are coming in and going out of each node in the value chain. All of a sudden, something that seemed like a good savings opportunity at one facility can become a very significant cost reduction opportunity when applied to all processes and facilities up and down the entire supply chain.

Figure 1. Illustrative example of supply chain inputs and outputs



As previously stated, if your suppliers are using too much energy, water or materials, or producing more carbon or waste than needed, then they are quite simply spending too much money, needlessly draining your profit, and cutting your competitive pricing and other advantages. Therefore, it is reasonable to expect that effective use of these metrics at a holistic level along the supply chain—not merely incremental adjustments to your own internal operations—can help significantly reduce operating costs. These savings can be shared between suppliers and your company to help everyone along the value chain reinvest in new product development, reduce product cost to improve margin, or reduce product price to take market share—any one of which may ultimately contribute to competitive advantage and increased shareholder value.

Typical benefits of a resource-focused approach

- **Good proxy for operational efficiency**—due to the ubiquitous nature of energy, carbon, water, materials and waste all up-and-down the supply chain.
- **Very low hanging fruit**—a process improvement at one facility or one node in the supply chain can be easily replicated at all facilities.
- **Significant savings**—are possible when your supply chain is looked at holistically, from raw materials suppliers all the way through retail and product end-of-life.
- **Low risk**—because cost is being taken out of the supply chain without introducing new risk.
- **Rapid payback**—because the remedies to reduce resource use can be fairly simple and easily replicated, payback periods can be among the fastest of any corporate project.
- **Insulate against commodity price shock**—by reducing the amount of energy or materials required to produce a product, you are reducing exposure to price shocks when energy or commodity prices rise.
- **Relationship-building**—the output of one vendor along the supply chain becomes the input for another. This dynamic paves a natural path for engendering collaboration between manufacturer and suppliers to reduce energy, carbon, water, materials and waste in order to save money for everyone.

The approach

Organizations might not be interested in reducing carbon output in their supply chain by one million tons until they multiply each ton by $175 and call it cash.

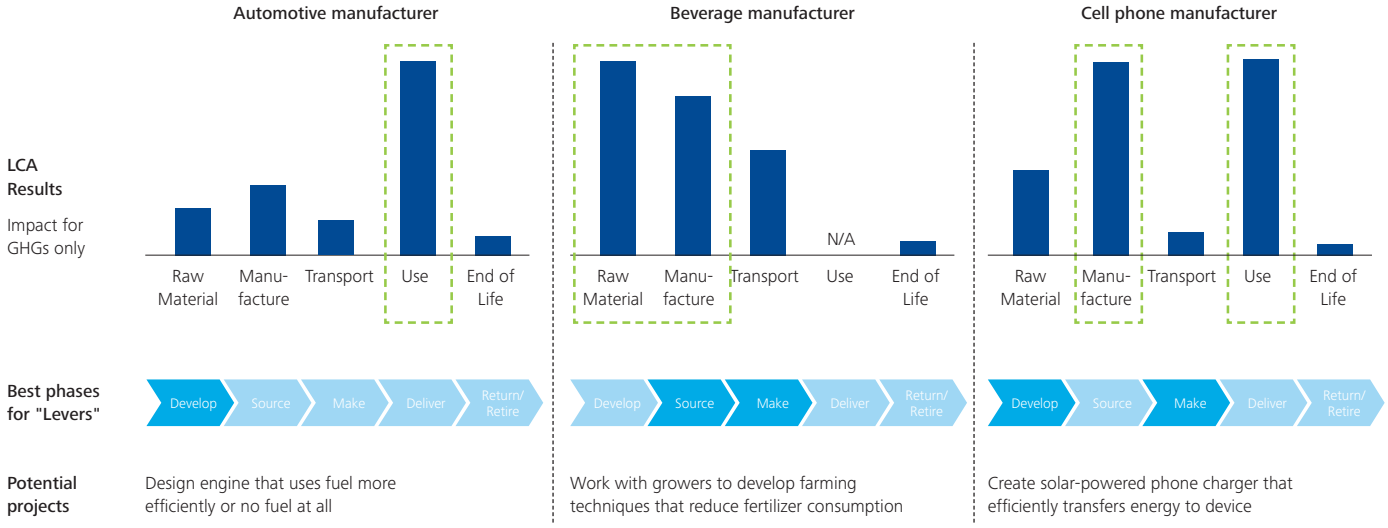
There are five broad steps an organization can take to determine where the five resource metrics are most overused along the supply chain so that savings can be rooted out. These steps are:

1. Assessment
2. Drill down into the hot spots
3. Map to existing solutions
4. Engage the supplier
5. Monetize

Assessment

The first step is the broad assessment, or the discovery phase. In this step, you are honing in on the broad areas that represent the biggest potential resource savings in the supply chain. Ultimate actions should be based on a solid understanding of a company's resource use across the entire chain, from product development, sourcing, and manufacturing through distribution, use, and disposal. To clarify where it should focus its efforts, the company should strive to understand what we call its "resource impact profile," so that cost reduction and efficiency efforts can be prioritized to make a difference for a company's business objectives (please see Figure 2).

Figure 2. Illustrative resource impact profiles and mapping to supply-chain phases



Water as a metric: The true cost of a cup of coffee

Making a step along the supply chain more efficient can have a huge impact on a company's—even an industry's—operations. Consider the role of water in the making of a simple cup of coffee. When all coffee planting and harvesting processes are taken into account—from irrigating crops to sorting and washing beans—it takes as many as 37 gallons of water to make a single cup of coffee. Reducing and recycling water all along the coffee harvesting and manufacturing nodes of the supply chain could make the average cup of coffee much cheaper, easing cost pressures on growers and sellers and producing operational savings that can be shared between supplier and coffee manufacturer.

A bottled water manufacturer, for example, will likely recognize a greater savings opportunity by looking at what goes into the plastic water bottles provided by its supplier than it will by looking at the cost of the ink that goes onto the product label. The manufacturer isn't going to focus on the ink because on order of magnitude and also in terms of where the energy use is, there is no comparison. So the assessment step will help identify the priorities that matter in terms of resource efficiency opportunities. These hot spots of resource use can be discovered through a process called Life Cycle Assessment (LCA).

Drill down into the hot spots

For each hot spot identified in the assessment phase, the next step is to really drill down and get more detailed data. You will be in the ballpark with the initial assessment, but in the drill down phase you have to refine your case. For the bottled water manufacturer, for example, this means obtaining from its raw material provider data about the plastic resins used to produce bottles. They will want to understand how the supplier uses energy and raw materials and learn more about the carbon and waste created in the process. The data collected from both the raw material supplier and the bottle supplier can be used to project a much more precise representation of what the plastic bottle portion of the supply chain represents regarding its energy, carbon, water, materials, and waste profile.

LCA in action for a media & entertainment company

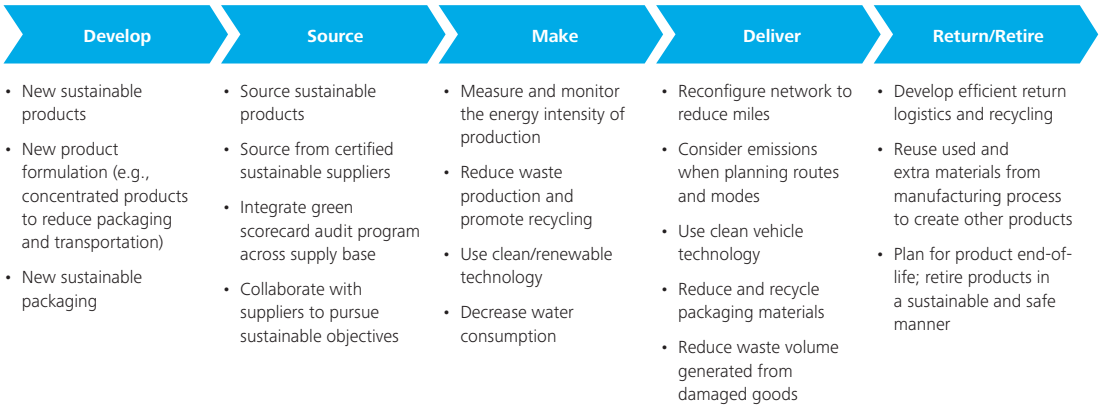
One large U.S. media and entertainment company conducted an LCA of its DVD supply chain, examining emissions across the phases of raw material manufacturing, raw material transport, product manufacturing, graphic design, component transportation, and retail and distribution. As a result, the company has undertaken a number of steps to curtail emissions, including reducing the weight of its DVD cases, improving energy efficiency in its DVD replication facility, and reducing the use of air transport in favor of less carbon-intensive ground transport. The LCA results showed that the company's efforts had reduced raw material consumption emissions by 13 percent, reduced transportation emissions by almost 20 percent, and reduced its DVD replication facility's emissions by 10 percent. The LCA analysis also helped the company to reduce the amount of petroleum needed to produce its plastic DVD cases, which helped provide a one-time $40 million in cost avoidance and ongoing cost savings in the tens of millions of dollars by insulating itself against price shock from rising petroleum prices.

Map to existing solutions

The next step is to look at existing efficiency solutions in the marketplace and map them to the areas of energy, carbon, water, materials and waste inefficiencies discovered within the supply chain via steps one and two. These solutions can be as simple as adding insulation to hot water pipes to something more complex such as finding alternative raw materials that require less energy or less expensive materials in the manufacturing process. For the bottle supplier, it might want to use less plastic in the bottles to reduce overall product weight as well as to insulate itself from crude oil price shocks, both of which could reduce expenses and put the supplier in a better position relative to its competitors.

Figure 3 demonstrates how a resource impact profile can serve as a guide to identifying the cost reduction actions that can be taken at various points in the supply chain to have a positive impact on a particular stage of the supply chain.

Figure 3. Illustrative actions in the supply chain that can increase resource efficiency



Engage the supplier

Discuss with your supplier the results of your resource impact assessment, pointing out where energy, carbon, water, materials or waste is too high for the type of component it makes, and ask how the solution you have identified to remedy the inefficiency can be implemented.

Monetize

The final step in a resource focused approach is monetizing the efficiency opportunities you have found because without turning them into cash savings, this is just a nice story. You would present the case to the supplier that says, given our analysis of your data we believe you can save this much energy, or this much on water or materials cost, or this much by reducing the amount of carbon or waste you currently produce. We want you to keep part of the savings because you will be making a capital investment to remedy the inefficiency, but we want part of it as well so we can sell more of our product and more of your products and create a competitive edge in the marketplace.

Oil and water—They do mix in bottling

Approximately five ounces of crude oil are required to make a single 16 ounce plastic water bottle, resulting in an extraordinary cost component for major beverage bottlers. The need for this natural resource as an input material is also a major risk factor as these companies are more vulnerable to the global turmoil that often surrounds oil-supplying countries. One major bottled water manufacturer with whom we recently worked was able to reduce the amount of plastic in each of their bottles by 40 percent, which resulted in both significant cost savings and reduction of a key supply chain risk factor by better insulating themselves from crude oil price shocks.

We believe application of a resource focused approach can have a transformative effect on business performance and on collaborative, negotiated relationships throughout the supply chain.

Conclusion

Our method of thinking about resource efficiency as a value driver by looking at supply chain input and output efficiency adds a new dimension to how companies think and strategize around their supply chain. We believe this approach can create wide ranging value—from immediate and significant cost savings, to improved competitive positioning, to improvements in areas such as strategic sourcing, complexity reduction, and management of commodity price volatility. In fact, we believe the application of this approach can have a transformative effect on business performance, helping organizations up and down the supply chain focus on rooting-out energy, carbon, water, materials, and waste inefficiencies that may be converted into bottom line savings for all involved.

A successful and efficient supply chain program depends on aligning resource efficiency initiatives with broader business goals, effectively identifying and interpreting the supply chain's impacts, and integrating resource impact profiles (and resulting efficiency plans) with business operations. Organizations that do these things may create a better opportunity to capitalize on the supply chain's potential to yield financial and competitive benefits for the business that go far beyond the traditional view of supply chain optimization.