

The ABC's of SCM

Fundamentals of Supply Chain Management – **Green**

How Green Was My Valley

Those of a certain age will probably always conjure up images of tree-huggers, flower children, and protest demonstrations when the subjects of conservation and the environment are raised. But, we've all come a long way since those days, no matter the earnest anguish of Al Gore's *An Inconvenient Truth*. While the excesses of Greenpeace and PETA would have you believe that the world, particularly the business world, is dominated by rapacious, soulless barbarians, the fact is that the supply chain world is getting serious about getting green.

And, it's time for us all to pay attention.

A Beginning Glimmer

At the outset, we began to be conscious of an emerging green movement as the mantras of "Reduce," "Reuse," and "Recycle" wormed their ways into our thought processes. At the consumer level, some of us took them more to heart than did others. And, a kooky few wouldn't stop yammering about the subject.

Then, the local trash haulers began to accommodate pickups of certain recyclable materials, sometimes subsidized by local governments. As is usually the case, the concept seemed to work when the economics of the process worked for the consumer as well as the hauler. With enough volume, it may work out for the local governments, too.



Meanwhile, Back At Headquarters

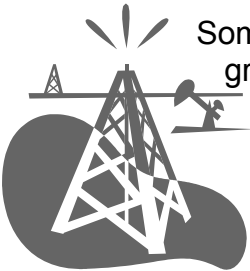
It's no great surprise when enterprising politicians are able to locate a good parade to jump out in front of, and that's certainly happened with many things green – and not just in California. It *is* news when flinty-eyed C-level executives come over to the environmental side. Maybe this is for real, after all.

Consider the evidence, a mere sampling of the literature. Time Warner's *Business 2.0* featured a 20-page section on business payoffs in green initiatives. *Global Logistics & Supply Chain Strategies* cover-featured the "good for business" elements of green supply chain operations. The Council of Supply Chain Management Professionals (CSCMP) devoted a full issue of *CSCMP Explores* to environmental sustainability.

Business Week carried features in successive months, one touting green technology stocks in which to invest. The next focused on the imperative or the US to develop even more green technology, or risk falling behind the market-driven European technologies that are helping to drive down carbon emissions.

Newsweek has carried similar content. So has *Time*. Imagine that – the popular press, business press, and trade press all going in the same direction. And so it goes.

The Saudis Made Us Do It



Some would suggest that the cost of energy is forcing us to think more greenly than we otherwise would. Maybe so. The price of oil and the cost of fuel – and excitement about future availability – change the economic equation of some critical supply chain elements. And, business people will make what they think to be sound business decisions. Sound plans for the future, too.

Recent History

Just-in-time manufacturing and distribution, even when given more lip service than actual execution, have been premised on low-cost, freely available oil, swapping low transportation cost for high inventory cost, a huge net gain when done well. Off-shoring manufacture to Asia (or anywhere, actually) is incredibly demanding of fuel, with both marine transport and longer over-the-road transport involved. The trade-off in that case is one of transportation cost for labor cost, another gigantic net gain when the cost of fuel is relatively low.

The business aspects of the Asia scenario get a little more complicated in the face of rising wages and growing affluence in the producing countries, but the primary shift is in fuel and freight costs. As those rise and stay relatively high, the total landed cost piece of the off-shoring equation changes decision points. And, contemplating energy cost at, say, twice current levels could change the outcome altogether.

Adding uncertainty of supply to the equation, which adds more potential variability to supply chain performance, only makes the idea shakier.

So, here's where we seem to be. Inventories must necessarily increase – dramatically - to reflect realities in product delivery variability as well as the length (in time, as well as in miles) of supply chains. Production of higher levels of inventory will also, by the way, consume more energy. Meanwhile, transportation costs are, while not necessarily reaching new peaks every month, at permanently higher levels.

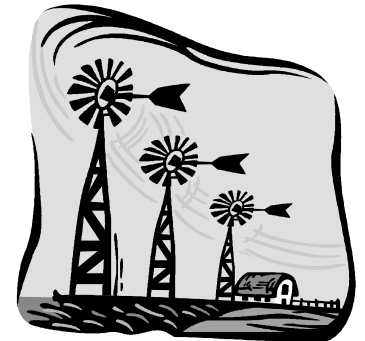
Not only is there more inventory – in transit, as well as in storage – maintaining customer service performance may be driving the need for more distribution facilities, to deploy inventories further forward in the chain. And, more resources are being consumed to build and run those facilities.

Admittedly, not everyone is making wholesale changes to their supply chains – at least not yet. But, more and more companies are eyeing developments cautiously, and looking at alternatives. It is conceivable that the day may come – and not far off - when off-shoring to China no longer makes a compelling economic case.

It is no wonder that tactical forces alone are driving hard looks at energy conservation of many kinds. But, those organizations that are looking beyond knee-jerk reactions are beginning to think in strategic terms about supply chain construct and operation.

Environmental Sustainability – Say What?

We think that the term really indicates a direction, more than an in-hand accomplishment, but some major players are getting into the act with far-reaching commitments. Wal-Mart (oh, no, not another Wal-Mart example) has announced objectives of: complete use of renewable energy; zero waste; and a product mix that sustains resources and the environment. Clearly, this initiative will require a long series of incremental improvements in facilities, fleet, operations, packaging, and sourcing.



Global Considerations

We may look to Europe for a preview of coming attractions; the core concepts will make their way here, sooner or later. For multi-national companies, European regulation is already influencing how green their behavior must become. Such initiatives as WEEE (Waste Electrical and Electronic Equipment Directive) and RoHS (Restriction of Hazardous Substances) are forcing, in a positive way, both product design and material selection to consider environmental and health impacts. All this, plus mandated recyclable content in products of all levels of size and complexity.

What Are People Doing?

The first step 'most always involves energy efficiency. Maybe it's restructuring transportation to reduce fuel consumption. Maybe it's electricity usage management, through more efficient lighting, more efficient HVAC systems, and/or flexible management of heating and cooling. Maybe it's a reduction in materials that are major energy consumers in their own production.

Maybe it's a return to the days of fewer, larger orders to optimize transportation usage and cost. In all cases, long-lasting improvement begins with a clear and complete understanding of processes and decision points, and gets legs through the attention of consistent and continuing measurement.

What Are Leaders Doing?

UPS, for example, a truly global services provider, has undertaken a number of programs



designed to reduce its fleet's greenhouse gas emissions – worldwide. Dell is pioneering a recycling program to improve and enlarge asset recovery. FedEx is rolling out hybrid trucks, with an ambitious goal for particulate emission reduction.

Hewlett-Packard, with immense global sourcing and global sales, has developed a Social and Environmental Responsibility policy, along with a supplier code that includes environmental activities. SC Johnson has, for years, carefully looked at – and significantly reduced – toxic substances in its products.

Sun Microsystems is restructuring its physical distribution network, and at the same time revamping product design, recycling, and end-of-life disposal processes. Timberland has developed a sustainability agenda that covers the use of energy, materials, chemicals, and systems. They've introduced water-based adhesives into shoe production, and are recycling PVC as they move toward zero PVC waste.

And, DHL – and Deutsche Post – are looking at biofuels and natural gas alternatives in fuel consumption, as well as working on greenhouse gas emission reduction and offering low-carbon (or carbon-neutral) shipping products. Even port authorities (notably Long Beach) are involved, with programs to persuade tenants to adopt greener technologies, and constructing green leases to help reduce diesel pollution.

A Sustainable Supply Chain Model

CSCMP has synthesized the approaches of three major organizations into a unified system that links:

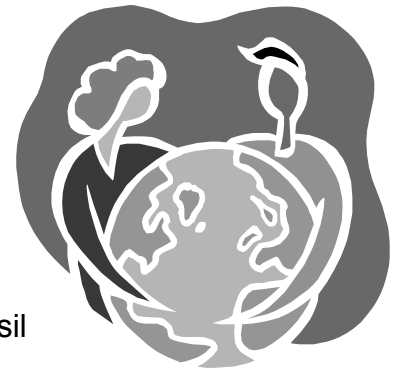
- Upstream elements
 - Supplier requirements
 - Code of conduct
 - Traceability/chain of custody
 - Returns policies
- Internal Operations elements
 - Conversion/transformation
 - Logistics
 - Scrap/packaging recycling
 - Reverse logistics
 - Remanufacturing
- Downstream elements
 - Distributor requirements
 - Code of conduct
 - Traceability and chain of custody
 - Returns management
- Product Development/Stewardship
 - Design for environment
 - Lifecycle analysis
 - Packaging minimization
 - Product re-acquisition and disposal



What Else Is Going On?

There is a host of initiatives – and companies developing supporting technologies – devoted to the spectrum of environmental challenges we face, including hunger, epidemics, over-fishing, drug-resistant infections. Those that seem to be of the greatest interest to the supply chain community – because we can do something about them, or they can do something for us – include:

- An interactive, renewable, smart power grid, with components of: solar, wind, wave, methane from cattle, clean coal, and car power
- Nuclear waste neutralization
- Water purification
- Waste disposal
- Air and water purification (and pollution prevention)
- Diesel to natural gas conversions
- Emission-free nuclear power, wind farms, reduced fossil fuel use
- Oil independence



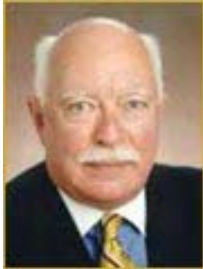
Is It Easy Being Green?

Of course not. But, it's not as hard as it used to be. And, the economic equation is definitely tilting toward the green side.

Look, this is no longer about the “thou shalt nots” of the regulators. Thou shalt not build a facility on wetlands. Thou shalt not leak nasty substances into the groundwater. Thou shalt not emit particulates into the air. It *is* about redefining and reconstructing the supply chains of the future.

The keys are to plan ahead of the wave, all the while realizing that this green thing is a journey, and not a destination. And, being realistic about how long it might take to get where we need to go.

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Art is a Partner with The Progress Group, and Chairman of The Supply Chain Group, a global consortium of supply chain consultancies, of which Art was a founding member. With more than 35 years of consulting experience, working with over 150 companies in more than 15 industries, Art has a broad-based track record in the areas of supply chain logistics, productivity, and information systems.

Art is the Co-Producer of Georgia Tech's Supply Chain Short Course for The Progress Group, and has toured Cuba and Vietnam to assess logistics issues in those countries. Art has also been published in Warehousing Forum, Modern Material Handling, Material Handling Engineering and The Journal of Business Logistics. He is often a speaker and track chair at WERC, CSCMP and other industry conferences.