**Turning Green into Gold**
Are Supply Chain Cost Containment and Carbon Footprint Reduction Mutually Incompatible?
By Keith Burgess and Simon Glass

*In a recent IBM survey, a majority of Supply Chain Executives identified cost containment as a continuing challenge. Meanwhile, the forces of consumer pressure and government regulation combine to encourage organizations to act now to reduce their carbon footprint. But at what cost? This article looks at how cost containment and carbon footprint reduction are not always incompatible. It looks at how leading organisations are simultaneously reducing their carbon footprints and containing costs.*

**Sustainability in the new economic environment**
In the past year, the state of the world’s economy has changed dramatically, moving abruptly from optimistic prosperity to a state of *frightening deterioration* (British Chambers of Commerce) and *truly awful recession* (British Retail Consortium). In this challenging economic climate, companies are focusing on concerted process-optimization activities and stringent cost control in order to build resilience. In a recent IBM survey of more than 400 Supply Chain Executives, 89 percent reported that cost reduction activities and programs were either very important or critically important*. However, the Green Agenda will not just conveniently go away – the U.K. Government has committed to an 80 percent carbon by 2050*. IBM has identified four drivers that continue to push sustainable business practices up the corporate agenda:

- **Laws, regulations and standards:** The U.K. Government has committed to key environmental targets and has made *putting a price on carbon* the central component of its climate change policy and legislation. Despite the economic climate, stronger legislation is imminent. This includes the 2010 Carbon Reduction Commitment. And many of the investments that governments are making into troubled businesses have carbon-management incentives at the core.

- **Stakeholder pressures:** Increasingly, a company’s green credentials are being used as selection criteria for investments. The Carbon Disclosure Project identifies green-focused investors with assets of >$41 trillion. Employees increasingly want to work for organisations with strong green credentials. And consumers are also taking notice. In a recent survey, 12 percent of U.S. adults reported that they would pay a 10 percent premium for environmentally responsible products*.

- **New business:** In the current climate, the fight for share of consumer spend is intensifying. Customers care about ethical and environmental issues. Their concerns are increasingly turning into action, influencing purchasing decisions. Innovative products that exploit new low-carbon technologies may well be among the winners.

- **Costs:** In a market characterized by volatile energy costs and other rising supply chain costs, cost containment and carbon footprint reduction are increasingly compatible. Indeed, cost pressure is likely to grow in importance as the major driver in the race to be green.
Some common approaches to supply chain carbon-footprint reduction

**Transportation.** Reducing the distance travelled by a product in a supply chain might be seen as the obvious point to start. Increased local sourcing may well increase the costs of raw materials, but this could be more than offset by reducing the distance travelled, which would reduce carbon footprint and transportation costs. It will also reduce exposure to supply chain risks including volatile fuel prices, long and unreliable lead times, and currency exchange risks. The introduction of enhanced vehicle technology and design can also improve fuel efficiency and reduce costs. So a win-win situation may well be possible, reducing emissions and reducing total supply chain cost.

**Product redesign.** For manufacturers, there may be opportunities to redesign the product itself to have a smaller impact on the environment and reduce energy consumption in manufacturing, distribution or end-use. Simple changes that reduce supply chain cost can have big implications on carbon footprint. Every conceivable change is an opportunity, from reducing the weight of the product to making it easier to disassemble. In some cases, innovation or new technologies may make it possible to eliminate some components or sub-components entirely and thereby eliminate a portion of the supply chain.

**Packaging.** Intuitively, reducing the amount of packaging on a product could reduce both the cost of a product and its carbon footprint. However, effective increased investment in packaging, to reduce waste and maintain product safety, is the optimum way to reduce both carbon footprint and overall supply chain cost. For example, U.K. grocers are under pressure to reduce plastic packaging, but many have pointed out that much packaging is there to protect food safety and prolong shelf life. This reduces waste in the supply chain, saving both cost and carbon footprint. Also, for manufacturing companies, typically up to 25 percent of packaging waste might be generated by returned or damaged shipments. Once a shipment is damaged, it is returned and another product shipped out, doubling the costs of packaging and fuel. Faced with such an issue, a major U.S. computer manufacturer introduced the use of logistics bars and air bags between pallets to stabilize the loads, thereby reducing the number of damaged shipments to less than 1 percent, while improving customer service and eliminating packaging waste.
Low carbon manufacturing. First, it may be possible to reduce both manufacturing cost and carbon footprint by applying lean/six-sigma principles – streamlining production steps, reducing water, energy and waste. Second, both can also be improved by maximizing asset utilization through predictive maintenance. We are seeing the increased use of smart asset monitoring technologies to track key indicators. This is through the use of embedded sensors that wirelessly transmit diagnostic data to the main enterprise asset management system, providing real-time analysis to help predict when an asset is going to fail. Finally, as legislation is introduced that taxes pollutants, toxic materials, and harmful emissions, organisations that reduce such emissions will also reduce cost.

Trade terms and shipment consolidation. If service-level agreements with suppliers and customers contain unnecessary requirements, waste is the result. When agreements force small, expedited deliveries, energy use goes up dramatically. For example, IBM has recently worked with a major U.K. brewery to help redesign its trade terms with its customers. By incentivizing pubs and clubs to accept larger, less frequent deliveries, the brewery can increase full truck-loads, saving significant costs and simultaneously reducing fuel emissions.

Improving first-time delivery. As the trend towards Internet shopping drives an increase in home deliveries, the success rate of first-time deliveries will have a major effect, both on costs and carbon footprint. Organisations that implement initiatives to improve first-time delivery success, will reduce both cost and carbon footprint, while simultaneously improving the customer experience.

Product Lifecycle Management. Products that are recalled from the market, or which must be upgraded or refurbished during their useful life, require some kind of reverse supply chain. By planning for these events up front, it is possible to eliminate or reduce unacceptably high energy costs later. How products are designed, assembled, labelled and packaged can have a profound effect on the efficiency of any reverse supply chain.

Turning green into gold
The real winners in the current climate will be those who recognize that developing sustainable business practices are fundamental to preparing for the future and to saving money now. These leaders will seek out cost-effective, sustainable business opportunities to reduce carbon impact and business costs while identifying new opportunities to increase market share. A recent survey by Aberdeen group showed that the best-in-class green supply chain organisations had on average, reduced supply chain energy costs by six percent in one year. Other supply chain costs had reduced on average by two percent. At the other end of the scale, laggards had seen overall increases in supply chain costs.

Customer demand for environmentally friendly and energy efficient products (to combat higher fuel prices) are one of the only sectors currently recording growth. Business-essential investments must still be made for future growth. Focus should be on improving processes so that costs are controlled rather than just making reactive cuts. With such an approach, an organisation will be ideally placed for when the market recovers. Process improvement coupled with product and service innovation, underpinned with prudent cost control, is the key. Most green initiatives can generate real cash benefits. Leading organisations are wise to concentrate on those green initiatives that will save money, provide carbon reductions and pave the way for future success.

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1. IBM Global Chief Supply Chain Officer Study, 2009
2. Government pledges to cut carbon emissions by 80% by 2050. The Guardian. 16th October 2008