

Mastering carbon management

Balancing trade-offs to optimize supply chain efficiencies

As the planet heats up, so do regulatory mandates to reduce greenhouse gas emissions worldwide. Going forward, companies should expect to be charged for their CO₂ emissions – forcing a change in how they run their supply chains. Quite simply, reducing the supply chain’s carbon footprint will become an inescapable obligation. By incorporating this goal into their overall supply chain management (SCM) strategy, businesses can help reduce their environmental emissions, strengthen their brand and sharpen their competitive edge.

The volume of global trade has more than doubled in the last decade. This phenomenon has been facilitated by relatively cheap energy, with low attention given to the impact on climate change.

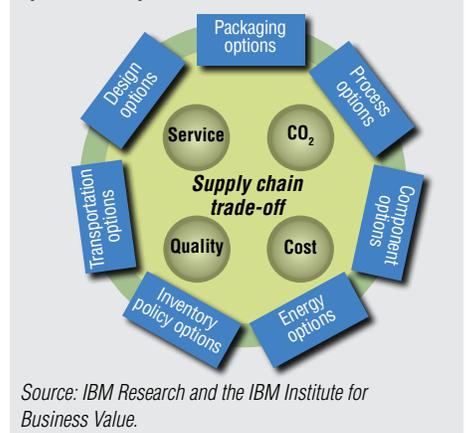
Going forward, firms should expect to be charged for their CO₂ emissions. And most certainly, this charge will force a change in the way companies run their supply chains. Common practices of the last century – like long-distance airfreight, small batch size, just-in-time concepts and energy-intensive production in countries with low environmental standards – will likely go by the economic and political wayside. Reducing the supply chain’s carbon footprint will become an inescapable obligation.

The goal will be to optimize supply chain products, processes, information and cash flow in the face of four main factors, or “trade-offs”: cost, service, quality and carbon emissions.

Trade-offs to reduce carbon output

“Green” supply chain management begins with recognizing the environmental dimensions (such as carbon emissions, demand on energy and other natural resources). Succeeding at it will ultimately require supply chain executives and managers to balance numerous options and master a new challenge: optimizing supply chain products, processes, information and cash flows in light of four main factors (see Figure 1).

FIGURE 1.
A trade-off model takes into account various options and performance factors.



Source: IBM Research and the IBM Institute for Business Value.

Five steps to mastering carbon in the supply chain

The fact that carbon trade-offs will complicate the supply chain emphasizes the need for organizations to address this issue in a number of ways – and fast. There are specific steps companies can take to limit greenhouse gas emissions – from easy-to-implement local improvements to complex optimizations that involve an extended supply chain.



The further these activities extend and integrate across the supply chain, the greater leverage and control they will have over carbon emissions:

1. Diagnose and assess.
2. Implement asset management and realize point solutions.
3. Address emissions in supply chain functions.
4. Find the optimum solution for integrating across functions.
5. Collaborate with supply chain partners to realize overall potential.

The time to tackle carbon emissions in the supply chain is now, when more options are still available to gain true and lasting advantages. This is one of those rare occasions when doing the financially smart thing, and doing the right thing for consumers and the environment are one and the same.

As companies move from a reactive to a proactive stance in managing carbon, they can convert a cost issue into a growth opportunity. Taking into account traditional concerns about quality, service and cost, a comprehensive carbon-management strategy can help organizations develop more sustainable growth opportunities, maintain competitive differentiation, and strengthen their brand image.

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January 2009
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How can IBM help?

- **Carbon Management - IBM Energy And Environment Framework:** The Energy and Environment Framework helps organizations visualize the issues of the entire enterprise by creating a strategic platform for addressing the impact on the environment.
- **Carbon Trade-Off Modeler:** The Carbon Trade-Off modeler allows for the development and analysis of alternative supply chain policies, options, and network configurations based on trade-offs between carbon emissions, cost, quality and service level.
- **Component Business Modeling (CBM) tools:** Component Business Modeling (CBM) allows organizations to identify opportunities for improvement and innovation by regrouping activities into modular and reusable components.

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