

## Everyone's talking about climate change—so why do software and logistics providers need to as well?

*“Green IT” and “green logistics” are two subjects whose importance has grown exponentially in the past year. It's just strange that almost no one has yet examined and illuminated the obvious link between the two: What can IT do to help promote green logistics and sustainability? This article tackles that very question.*

### **One universal truth: there are no universal solutions**

Let's dispense with all illusions right from the start: IT is not *the* solution. Which is a shame, actually. But there is no single solution. In the history of our species, there has likely been no other process of change influenced by so many parameters, fraught with so many variables and requiring such a multi-faceted approach as the attempt to rescue the natural underpinnings that make our life on this planet possible.

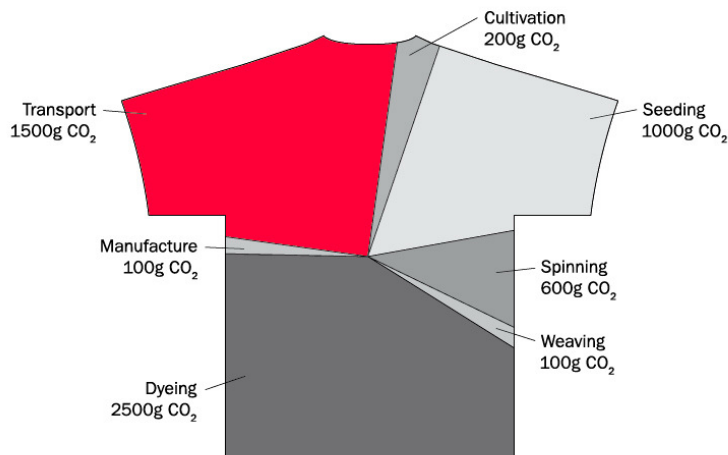
Believe it or not, for example, the CO<sub>2</sub> baggage that your t-shirt carries around weighs a full 5.7 kg—20 times as much as the shirt off your back. How can this be reduced? If you only approach the problem from the raw materials side or simply look at the dyeing process (which accounts for nearly half the CO<sub>2</sub> weight, by the way)—in other words, if you only pull on one corner of the t-shirt, the most you'll do is achieve a superficial success and maybe burnish your image a bit. But it takes a comprehensive approach for truly sustainable sustainability. The sustainability leaders show us how that's done.

And so those who, as in this article, address only one issue (transport and logistics) and narrow the topic down even further (by focusing on the role of IT) must take care not to think all other efforts are secondary or unimportant. Enough of that, then. Let us now devote ourselves to the topic at hand: What can software do to make logistics greener? Five highlights from the diversity of possibilities and visions:

### **1. Software for calculating CO<sub>2</sub> emissions/eco-assessment**

We'll start right off with the “outsider” among the five examples—outsider because these software systems do not necessarily or solely concern transport: We're talking about software that calculates CO<sub>2</sub> emissions, the so-called “carbon footprint.” And yet: These systems are indispensable, and their calculations form the basis of nearly all the other measures outlined below. One function of such programs is to break down how much each subprocess contributes to the carbon footprint of a product.

— Calculated conservatively, the CO2 baggage of a t-shirt produced in China is 20 times as big as its own weight\*



\*The CO2 baggage of a t-shirt produced in China and shipped by air is approx. 6 kg, about 25% account for transport emissions.  
Source: Systain Consulting GmbH

This calculation is interesting and important not only at such an “overriding” level. For our purposes, its interest and importance come into play especially when we analyze emissions within the transport process. After all, the many considerations relating to modal split only work because the various routes and modes of transport show significantly different carbon footprints.

What’s also critical in the end is that improvement can only be ascertained by regularly checking the emission profile. Holger Sampel of PE International, a software company specializing in eco-assessments, recommends the following procedure: “Create an energy profile and identify the main contributors to energy consumption. Using this initial audit, establish a target value and a system of key indicators for continuous monitoring. Define, prioritize and implement measures to reduce consumption.”

## 2. Avoid unnecessary transports in existing supply chains

Let’s move closer toward the core functions of logistics and SCM. Even before goods are transported, it is possible to optimize delivery routes and avoid redundant trips—by using supply chain execution systems that bundle consignments.

That may sound banal, but it isn’t. Despatch centers and warehouses often process orders without any check of whether multiple shipments are going out to the same consignee on the same day. With low transport costs, that used to be a simple business cost calculation: Is it really worth searching the goods issue department for the second package to Smith & Co., repackaging it and creating new documents? Often not. Investing in IT solutions that take care of this same bundling before the packing phase didn’t used to be a big enough priority for many small and medium-sized companies.

That could now be changing, because the “emission surcharges”—whatever form they take—could tip the balance once and for all: Such a system achieves internal savings through consolidation (less documentation, less packaging, less shipping and handling expenses). And by the time carbon taxes have significantly increased the cost of individual trips, this will be one of the few ways to remain competitive here. What’s interesting is that many of the leading order processing systems do not offer consignment consolidation as a standard feature. One more reason for specialized IT services and applications in logistics.

### **3. Better visibility to avoid unnecessary transports**

Taking things one step further back puts us at our third example: Many unnecessary transports are currently “needed” only because large stretches of the overall supply chain are not transparent. If the chain gets out of sync at one point, it’s often noticed much too late to intervene in a resource-saving and environmentally friendly way. Delivery problems can only be countered with air freight and express courier services.

It’s a fact: more visibility always means more sustainability. That’s why it is more and more important to provide information along the entire chain independently of the various means of transport. Which means of transport is used for what purpose? Which consignments are picked up when and by which forwarder? Are extra trips used to bring back load devices from far away? Is it possible to combine the retrieval of empty load devices with other shipments?

Visibility platforms such as AEB IntelliChains, which respond proactively to delays and deviations, can make important contributions toward achieving sustainability targets.

Such visibility tools are also ideally suited for the continuous monitoring of sustainability targets mentioned in the first section above, since they compile the relevant data from all existing logistics systems and supplement the transport’s economic data with its ecological data. This makes it possible to measure and plan resource savings.

You don’t need to be a prophet to predict that in the foreseeable future it will be as normal for forwarders to provide emission data as it is today with lead times. The DHL GoGreen package is just one example. TNT and Schenker are also busy here. All the transport service providers that want to keep up with this trend will have to do their part.

### **4. Integrate “sustainability” as a decision-making factor in selecting a carrier**

That brings us already to our fourth point and forms the basis for an especially interesting field, especially for shippers and logistic service providers: the selection of the “right” forwarder. This remains a gut decision in many companies today, but Internet technology and modern supply chain execution systems have been able

for some time now to calculate the best-suited carrier for each individual shipment based on a variety of parameters or decision-making components.

Admittedly, one can reduce these parameters to a simple dichotomy: Either I choose the most affordable—let's go ahead and say “cheapest”—carrier, or I choose the fastest and most reliable carrier.

Three North American professors—Jean-Paul Rodrigue, Brian Slack and Claude Comtois—had a premonition all the way back in 2001 that another main factor would emerge. The trio of experts wrote an article entitled *The Paradoxes of Green Logistics* for the *Handbook of Logistics and Supply Chain Management*, containing passages that seem almost clairvoyant in retrospect—predicting, for example, “that purchasing departments [will] become a critical point in the move towards applying green logistics. Traditionally, price and quality characteristics formed the basis of choice, but because environment preservation is seen as desirable in general, greenness can become a competitive advantage.”

Today, one might add that it is more likely the IT systems rather than the purchasing departments that are driving the automation of carrier selection forward. And the option “select the greenest carrier from among the fastest” sounds funny, but the most innovative software companies are working on these very concepts.

## **5. Optimize cargo space usage and route planning**

One last example and something that is becoming more and more important with today's highly decentralized supply chains: the optimization of cargo space usage and route planning. A simple example of this type of IT-supported green logistics is electronic transport exchanges. Germany's Green Party (*Bündnis 90/Die Grünen*) published an extremely interesting thesis in the summer of 2007 entitled *Greening Logistics* describing how such virtual freight marketplaces “create a network of various shippers with carriers to greatly optimize the capacity utilization of truck shipments. This makes sense both economically and ecologically, as the average round-trip capacity utilization is only about 60%.”

The more that mobility becomes a valuable commodity, the more effort will be put into generally avoiding transports or at least increasing their capacity utilization and efficiency. IT systems for freight optimization were originally developed to contain costs. Now these systems help save emissions and energy as well, since they support logistics planners in optimizing trips and, ideally, eliminating trips altogether.

The Duisburg-based logistics company Alpha Group, which handles logistics for McDonalds, is setting the standard here and was distinguished with the 2007 “European Sustainability Award” for creating an all-around environmentally supply chain. Company spokesman Christoph Thünemann: “Through constant manual and IT-supported optimization of trip planning and consistent capacity utilization of trucks, we were able to save 74,000 kilometers in 2006 over the previous year while increasing overall tonnage and the number of restaurants served.”

McDonalds implemented the “food town” concept, modeled after the American automotive industry. This involves bringing together the fast-food chain’s distributor with its suppliers (bread, pickles, meat, etc.) in one place. Germany has two such food towns, and together they eliminate some 13,500 additional transports annually, says Thünemann.

Deutsche Post was also able to apply modern trip planning to reduce the kilometers traveled within each postal delivery zone by some 14% from 2001 to 2006. (Source: presentation by Monika Wulff-Matthies, DPWN <http://www.gruene-bundestag.de/cms/verkehr/dokbin/190/190007.pdf>)

## **Narrowly avoiding the rebound effect: It takes green IT to make green logistics possible.**

There is still much to say about IT solutions and SCM strategies to support sustainability initiatives. Simulations also factor in emission profiles and energy consumption scenarios when choosing a location, for example. It is also possible to apply these tools toward “environmentally optimizing” the structure of the supplier network. The organization of the individual production phases, the warehousing concept and of course the delivery service are significant factors affecting a company’s logistics strategy—and IT always plays a role.

That, on the other hand, causes attentive and alert readers to furrow their brows: Doesn’t this whole IT infrastructure use just as much energy as it saves? Don’t all the computers and servers and cables contain the same amount of contaminants as their programs save through reduced wear and tear on truck tires from more efficient routes? Doesn’t it take just as much CO<sub>2</sub> to cool computer centers as is saved by consolidating consignments? Go ahead and unfurrow your brow: IT optimization of logistics still saves much more energy than it uses itself. And yet: green logistics only works with green IT. But that would be a whole different article, naturally. Naturally? Yes, naturally!

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