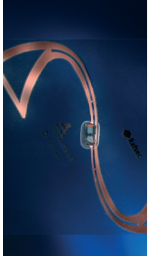


# The Future Direction of Supply Chain: Mastering Reverse Logistics

Mark Elliott and Jonathan Wright



**Since the European Waste Electrical and Electronic Equipment Directive will come into effect in 2005, companies around the world must now begin to consider how to master reverse logistics.**

Impending environmental legislation is set to reverberate across almost every sector of the European economy, but its impact will affect manufacturers and supply chains worldwide. The issue involves more than just the nuts and bolts of legislative compliance. Businesses responding too slowly or ineffectually are likely to incur significant cost increases, while businesses responding in a timely and structured manner can expect to enjoy not only a competitive advantage, but also a potential reduction in costs.

This appears to be the impact of the Waste Electrical and Electronic Equipment Directive (WEEE Directive), due to be enforced at the end of 2005. Promulgated by Brussels over a 10-year gestation period, it requires manufacturers of electrical and electronic equipment sold in Europe after Aug. 13, 2005, to be responsible for the end-of-life environmental disposal of this equipment. This includes refrigerators, computers, TVs, and cell phones – a bewildering variety of devices and appliances – all needing to be returned to their point of sale for a safe and environmentally responsible disposal.

From an overall corporate perspective, it's hard to argue with the sentiments behind the legislation. As good corporate citizens, environmentally safe disposal naturally seems a responsible course of action – quite apart, of course, from the fact that the law will soon mandate it. But however laudable the intentions, the practicalities of coping with the directive are bound to be challenging and the cost of compliance is expected to be high.

## Key Challenges

The challenges fall into two main areas. The first is the issue of how the return and disposal process will work in practice. For some companies, reverse logistics is already a headache: The complications of dealing with overstock from retailers, warranty returns, repairs, and mistakenly ordered items already consume a disproportionate amount of management time and cost. Keep in mind that this is when dealing with only a relatively small proportion of

the items sold. Now imagine the complexities of returning 100 percent of goods sold.

Admittedly, the 100 percent point won't be reached for a while. The end of life for the majority of household consumer durables sold after Aug. 13, 2005, isn't going to occur for some years. However, what will start out as a small flow of early failures and warranty returns will steadily increase – and a consistent process needs to be in place to deal with them. And that's only for household durables. Digital devices, such as cameras, computers, and cell phones, have a much shorter lifecycle and will reach the 100 percent point much sooner. Furthermore, it is almost impossible to measure what historical electrical waste is already in the market, and could result in an initial surge when the directive comes into effect and is widely communicated to the general public.

Make no mistake, companies that are in either the electrical or electronics industry, or sell to European consumers or businesses, face a tide of returning products headed their way. Traditionally, most companies operate supply chains that principally have only one gear – forward. Now, however, companies will have to master the reverse gear as well, and learn how to master it cost-effectively.

The second area of challenge involves the destination of these electronic and electrical items once they have begun their reverse flow along the supply chain – and it isn't a landfill dump. The purpose of the WEEE Directive is to reduce landfill dumping, and to actively promote the recycling and reuse of materials that are part of the equipment covered by the directive.

As a result, strict targets apply. The EU expects to see four kilograms of eligible equipment collected per country resident, per year, of which at least 70 to 80 percent by weight must be recovered rather than dumped, and at least 50 to 75 percent by weight must be actively recycled.

Put the twin imperatives of reverse logistics and recycling targets together, and it doesn't take much to imagine the challenges

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involved. For both manufacturers and retailers, reverse logistics and recycling are outside of what might realistically be considered their core areas of competence. Even if the skills could be recruited or acquired, issues around practicality remain.

In materials handling, for example, supply chains are used to managing brand-new, neatly packaged goods through highly automated distributions centers – not rusting washing machines or old refrigerators. Retailers also don't have the space to store end-of-life goods. Not only is retail space expensive, and consequently devoted to goods for sale rather than goods for recycling, but there are also significant image and safety problems associated with mixing the two flows of goods – one heading forward to consumers, and one heading backward.

And what of the tasks that must be accomplished once the end-of-life products have been delivered to their destination? Having a recycling target is one thing, but achieving it is quite another. Products will need to be completely disassembled, and components will require sorting – not just plastics here, metals there, but with different types of plastics and metals carefully segregated. Some major

efficiencies can be managed with the same watchful eye as in the manufacturers' own factories?

Economies of scale are also a part of the issue and need to be addressed. Is it more efficient for, say, a particular manufacturer's mobile phones and TVs to be processed separately at hundreds of general-purpose generic treatment points around Europe? Or would it be more efficient to process these centrally, at a few specialized super-hubs that possess the right equipment to do the job at the lowest cost? Putting cost aside, from which type of facility – large and specialized or small and general – are the maximum yields of recovered material likely to be realized?

### Sharing the Burden

Recognizing the strength of these arguments, both manufacturers and retailers have been reviewing their options. For most, this has been an uncomfortable process, but some broad strategies are emerging. In general – at least among leading-edge businesses – a consensus is forming around the view that while contemplating a go-it-alone approach would be fraught with difficulty, abrogating



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components will be appropriate for refurbishment and re-use, or even resale as spare parts. Finally, any materials that can't be recycled must be discarded. When one considers the millions of tons of electrical and electronic items sold throughout Europe each year, the task seems overwhelming.

Of course, these aren't new issues. In recognition of this, the legislators who drew up the WEEE Directive have built in an alternative. Similar to the current operations of some European locations, municipal authorities would undertake the task – for a price. Instead of returning appliances, computers, and so on to the retailer from which they were purchased, consumers and businesses would take them to their local municipal waste processing facility. There, skilled professionals would handle the problem, leaving retailers' and manufacturers' supply chains uninterrupted by a reverse flow of end-of-life products.

Who will pay for this service? In the short term, the manufacturer will have to pay a bill submitted by the municipal authority. But in the long run, the consumer will end up paying through very visible price increases. The WEEE legislation envisages the cost of disposal to be shown on the consumer's invoice for every new item purchased.

Even so, for some businesses, the municipal option will undoubtedly represent an attractive approach going forward. However, it won't necessarily be a cost-effective alternative. Who, for example, has the greatest incentive to operate the recovery and recycling process in the most efficient manner? Is it a municipal authority, which can pass the costs of disassembling and recycling on to a third party? Or, is it instead the individual manufacturer in question, where

the problem by relying on municipal facilities will not necessarily be the most cost-effective path.

Instead, a consortium-based approach is emerging, with businesses banding together to share the burden. It's an idea with obvious appeal: Who knows better how to recycle refrigerators or cell phones, for example, than the businesses that originally constructed these products? These companies will be able to maximize the use of the recycled materials within their own operations.

The manufacturer-led model is not the only variety of consortium being contemplated. Retailers are banding together, too, intent on finding a way to prevent end-of-life products from occupying their valuable retail space. Cross-industry consortia are also emerging, where companies with a shared requirement for recycling, but without a competitive clash of interests, pool their resources so that they can cost-effectively tackle their WEEE obligations. Such a pooling of interests recently resulted in the alliance of some consumer electronics companies that don't have overlapping product lines.



**WEblink**

Learn more about the European Waste Electrical and Electronic Equipment Directive and other legislation at EUROPA, the European Union's portal Web site: <http://europa.eu.int>.

### Reasons to Outsource

But banding together is only part of the story. The real problem is that irrespective of whether they are in a consortium or not, neither manufacturers nor retailers sufficiently possess the capabilities and infrastructures to undertake the physical activities required for effective recycling and disposal. Rather than directly investing in transportation networks, disassembly plants, recycling operations, and disposal facilities, it's logical for emerging consortia to buy these services from organizations that possess these capabilities.

But will the consortium-based approach suffice? It's certainly a start. But as these companies understand all too well, there's a significant difference between being in business and being in business profitably and effectively. Farming out the various tasks of transport, disassembly, recycling, and disposal to specialist contractors isn't necessarily the same as getting a good deal from those same contractors.

Regardless of how skilled companies believe themselves to be in contract specification and procurement as individual organizations,



**Companies should also keep in mind that the WEEE Directive is a very different piece of legislation that will require mastering reverse logistics in their supply chain operations.**

According to a report by Datamonitor, 80 percent of retail returns in the United States are outsourced to logistics companies. In Europe, that figure is closer to 15 percent. Although this indicates that Europe's reverse logistics market is currently quite immature, some European companies have already reviewed their reverse supply chains and are looking to outsource to a third party. For example, the British Retail Consortium (a federation of major U.K. multiples) is soliciting responses from organizations that are interested in working with the retail body to cost-effectively discharge its WEEE obligations. Similarly, a group of household electrical goods companies operating under the banner of the Association of Manufacturers of Domestic Electrical Appliances recently announced the creation of a WEEE-specific consortium that will also seek bids from specialist third parties to recycle and dispose of end-of-life products.

Additionally, an indication that non-European manufacturers are also realizing the impact of the 2005 legislative deadline is that the Recycling Electrical Producers' Industry Consortium includes not only European manufacturers, such as Bosch, Merloni, Candy, Philips, and Beko, but also U.S. domestic appliance manufacturers Whirlpool, Kohler, and Emerson.

they will have to develop a shared framework with consortium partners if they are to approach the task in a meaningful way. Even more fundamentally, dealing with each specialist contractor on a stand-alone basis is not the best way to identify and exploit any synergies that might emerge from viewing the outsourced process as an inter-linked network, rather than as a series of disparate operations.

To manage such a chain of disparate specialists will require another set of skills. Indeed, supply chain integrators that have experience managing multiple operations and relationships may play a pivotal role.

To further reduce the need to recycle electrical or electronic items, more creative use of resale channels could be employed. The market for refurbished or second-hand products has always been vibrant; just difficult to manage through a common channel. Online auction marketplaces, such as eBay, present a highly scalable and low-cost mechanism for resale, where price-sensitive consumers are quite willing to purchase refurbished products rather than brand-new items.

It's a different way of working. But companies should also keep in mind that the WEEE Directive is a very different piece of legislation that will require mastery of reverse logistics. ■

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