



Avoiding an E-Waste Emergency

“Where there’s muck there’s brass”. Letting market players make money out of e-waste is key to avoiding rapidly expanding landfill. But with so many interests at stake it’s not as simple as it sounds. The recently recast Waste Electrical and Electronic Equipment (WEEE) Directive attempts to address the changing environment. But is it flexible enough?

With expanding technology markets, shrinking innovation cycles and falling prices feeding today’s throw-away society, unwanted electrical and electronic equipment is a fast-growing source of waste. Nearly *50 million tonnes of e-waste* was generated worldwide in 2012 – about 7kg for every person on the planet. By 2017 the UN’s StEP initiative estimates the annual toll of discarded refrigerators, computers, televisions, mobile phones and other devices will fill a line of 40-ton trucks stretching three quarters of the way around the equator.

In 2012, the EU recast its Waste Electrical and Electronic Equipment Directive (WEEE Directive) with new guidelines to address this growing problem but with the environment continuing to evolve, challenges remain. February 14 this year was the deadline for EU member states to transpose this new Directive into their national legislation.

Early success

Since its inception in 2002, the WEEE Directive has aimed to reduce the amount of e-waste by pushing legislation through its member countries setting recycling targets and requiring producers to pay for its recycling.

There is no denying the Directive’s success both environmentally – by removing hazardous gases from end-of-life electrical appliances and preventing the release of ozone-depleting substances (CFCs) into the atmosphere - and economically - with the recovery of valuable metals such as gold, silver or copper. But the Directive has not come without controversy; being criticised for burdening electrical manufacturers and importers with heavy additional costs.

The Directive Recast aims to address some of these concerns, lightening the burden on producers by simplifying the bureaucracy in an environment that has changed markedly since the concept of extended producer responsibility (EPR) – a strategy whereby producers finance the collection and recycling of their products and integrate costs into market price – was first raised 20 years ago.

Changing environment

When EPR was first discussed, disused electrical products were seen as a cost that producers should pay for and there was little notion of the value to be gained from the e-waste itself.

Today, with people and businesses struggling in the

fallout of the global economic crisis, as recycling becomes sophisticated and with commodity prices on the increase, there is a realisation that these goods, while no longer “fit for purpose”, have an inherent value once dismantled.

This has brought informal actors onto the scene greying the waters and putting pressure on producers as they attempt to comply with legislation which has been at times unclear and which varies from state to state.

Black market in waste

My recent report “**Extended Producer Responsibility: Stakeholder Concerns and Future Developments**” co-written with Nathan Kunz, Atalay Atasu and Kieren Mayers, looks at the future of EPR in the European Union and found the single most important factor is the leakage of waste that falls from the system due to the emergence of informal recycling firms. These “black (or grey) markets” prevent all e-waste from being counted making it difficult for producers to reach their increased collection rate targets of 45 percent in 2016 rising to 65 percent in 2019.

The report found even if all e-waste were traceable and all players registered, there would still be a need to force everyone to use minimum standards of recycling. There is little point in achieving recycling rates in any given European country, if no controls are in place to ensure that the recycling is done to the proper standards. This is also a particular problem for waste that is exported to developing countries.

Stream-lining legislation

Other challenges relate to the inconsistencies in legislation. Like the initial WEEE Directive, the recent amendments only set minimum conditions that have to be transposed and implemented in 28 member states. Each country has its own unique implementation and means of enforcing WEEE legislation. And, while the WEEE Directive Recast retains each producer’s individual responsibility for their own products at the end-of-life, it doesn’t detail how such responsibility should be implemented in practice.

Another inconsistency is the matter of who owns the waste. While producers are responsible for the end-of-life items, they don’t own them. The buyer has control of the product until he or she gives it away for recycling, when it becomes the property of the waste collection point, which is often the municipality. In some countries the municipality is allowed to on-sell the waste to private operators and in others not.

Visit **INSEAD Knowledge**
<http://knowledge.insead.edu>

Challenges of a changing market

While the Directive has achieved its main objective of making producers financially responsible for the collection and recycling of their products, it has missed other goals most notably failing to incentivise producers to design their products for easier disposal at end-of-life.

It has also failed to address the problems that new designs have for waste management companies. Producers are always developing new products and packaging as new materials and technology become commercially available. This can transform waste markets very rapidly and disrupt waste management plans and investments, examples include the use of multi-layered packaging, or transition from CRTs to LCD display technology. In addition, new understanding of the environmental impacts of hazardous substances may result in changes to waste processing that were not necessarily an issue at the time products were first developed and designed (such as mercury in energy-efficient lamps). This creates risks for waste management operators and EPR systems alike.

One thing though is clear. Waste markets are inherently complex and highly dynamic. They can, and probably will, change over time due to different forces that are difficult to predict. This dynamism makes a strong case for simplicity and flexibility, especially in the design of legislation. Future EU directives should not be too detailed because this could lead to a straitjacket situation when the dynamics start to play on the efficiency of waste markets. It is clearly better to have general binding principles and frameworks that can be adapted to the dynamically changing situation.

It would be an ideal world if the technology inside these gadgets could find a sustainable solution to their end-of-life problem.

Luk Van Wassenhove is a Professor of Technology and Operations Management and The Henry Ford Chaired Professor of Manufacturing at INSEAD.

Follow INSEAD Knowledge on [Twitter](#) and [Facebook](#)

Find article at

<https://knowledge.insead.edu/operations-management/avoiding-an-e-waste-emergency-3215>

Download the Knowledge app for free

