Windmills And WEEE

Kathryn Sheridan considers the future of e-waste and the proposed revisions to the RoHS Directive, which could see this headline changed to "Windmills As WEEE"

The Environment Committee in the European Parliament voted in early June on the revision of the Restriction of Hazardous Substances (RoHS) Directive. The RoHS Directive – which was first proposed in 2002 and entered into force in 2004 – is a "sister directive" of the Waste Electrical and Electronic Equipment (WEEE) legislation. Both directives aimed to increase the recovery and recycling of electronic or e-waste, and set up recovery schemes for consumers. Despite these measures, the European Commission claims today that only one-third of electroscrap is collected and treated separately.

When it announced the revision of the WEEE and RoHS Directives in December 2008, the European Commission said its main objective was to improve the implementation and enforcement of the legislation, as well as to reduce the administrative burden. Improvement and simplification was the name of the game as well as the proposal of "higher, but more flexible targets" for collection and recycling. Certainly mountains of kettles, toasters, MP3 players and home computers containing heavy metals and potentially hazardous substances present a waste issue which cannot be ignored in a society that values consumption and technological innovation. The illegal trade of waste to outside the EU was also something the Commission wanted to address, as well as boosting the market in valuable recovered raw materials. By highlighting heavy metals such as lead, mercury and cadmium, as well as hexavalent chromium and flame retardants such as polybrominated biphenyls or polybrominated diphenyl ethers in RoHS, the Commission wanted manufacturers of electronics to phase these substances out of production. Yet, at the time of the proposed revision, the Commission said that many products not complying with the substance restrictions had been found on the EU market.

In the revision of the RoHS Directive, the Commission proposed the inclusion of medical devices and monitoring and control instruments. What it never intended was an idea tabled by the Swedish EU Presidency to include all electronic and electrical equipment, beyond the original scope of household equipment.

This so-called "open scope" would have included fixed installations, such as escalators and renewable energy installations.

Carbon Considerations

IN TERMS of sustainability and carbon footprint considerations, what greater nonsense than to penalise renewable energy installations by treating them as household waste? How can the EU meet its climate and renewables objectives if solar panels and windmills are treated along with coffee machines and calculators?

The argument given by those in favour of including renewables in the scope of the Directive was that certain RoHS substances are used in windmills and solar panels, such as lead solder or cadmium telluride semi-conductors in thin film solar panels. Cadmium telluride is a stable compound of cadmium and tellurium.

However, large power-producing installations should not end up being scrapped in the household waste stream at their end of life. This equipment is installed, maintained and uninstalled at end of life by professionals.

At least one producer of thin film solar panels has its own take-back and recycling programme and an initiative called PV CYCLE is grouping thin film producers in a voluntary collection and recycling scheme.

The carbon footprint of thin film solar and wind turbines is so much smaller than other renewables and fossil fuels that the proposed "open scope" was clearly counterintuitive, something which was firmly recognised by the Environment Committee of the European Parliament when it came to vote.

The Committee voted to completely exclude renewables from the RoHS Directive and even adopted a "recital" to express its support for renewables. Large, fixed installations – like escalators – were also excluded.

When compared with fossil fuels, which emit heavy metals directly into the atmosphere, the life cycle analysis of renewables is much more positive. Potentially taking certain products off the market and only leaving their more energy-intensive competitors would have been a disaster for both European competitiveness and EU climate goals.

> *How can the EU meet its climate objectives if solar panels and windmills are treated along with coffee machines?*

Recovering valuable metals from WEEE is something that has been covered in this column before, but recent findings from the United Nations Environment Programme (UNEP) show that too few metals are recycled.

The UNEP report, *Metal Stocks in Society: Scientific Synthesis*, said that boosting the recycling rates of both everyday and speciality metals is critical to move the global economy towards clean, environmentally-friendly technologies.

The Key Is Above Ground

GIVEN THE demand for metals and other speciality materials for cleantech applications, such as solar panels and hybrid vehicle batteries, recovering metals which are already in use "above ground" in household items, buildings and ships and products like computers and cell phones is key, according to the UN's press release.

Not only does recycling metals already above ground provide necessary supplies, but it also provides "the opportunity for reducing energy demand while curbing pollution, including greenhouse gases", according to the reports' author Thomas Graedel, a Professor of Industrial Ecology at Yale University.

The reports examined the life-cycles of 62 different metals and found that only a few: iron, platinum, copper and aluminium currently had end-of-life recycling rates of 25-50 percent. Most of the others were not recycled at all.

"This is clearly not sustainable," Graedel said, stressing that, among other reasons, recycling metals was between two and 10 times more energy efficient than mining them and smelting them from virgin ore.

Developments in China on the protection of its rare earth minerals may also encourage increased recycling as the supply of certain elements may become more tightly controlled. A recent article in the online news service, EurActiv, claimed that the plan to ban exports of key rare earth materials would be a real concern to manufacturers of "high-tech products ranging from computers to electric car batteries and wind turbines", according to some expert views.

The article claimed that the anticipated ban of exports of Dysprosium, Terbium, Thulium, Lutetium and Yttrium means that alternative supply chains will need to be created outside China. Recovery and recycling should surely be able to meet some of this demand.

The European Commission is also working on a report to define which raw materials are "critical" to EU industry. For companies working in the recycling and recovery field, these initiatives will be worth following. CIWM

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