The e-waste land

Today's throwaway culture has created a toxic timebomb - techno trash. But will new laws deal with our mountain of unwanted computers, TVs and toasters? Rachel Shabi reports

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It had to end here, in an impoverished region of Asia. Once a peaceful, rice-growing village, Guiyu, in the Guangdong province of China, has become an electronic junkyard - a grotesque, sci-fi fusion of technology and deprivation. Guiyu, and many places like it in India, Vietnam, Singapore and Pakistan, is where electrical waste from the west is routinely shipped for "recycling". Around 100,000 men, women and children in Guiyu make $1.50 (94p) a day, breaking discarded computers and other electronic goods - mainly American, but also from the UK - into component materials of steel, aluminium, copper, plastic and gold. This is the gloomy underside of our glorious technology and the voracious rate at which we consume it. There is an inevitable logic to this scenario, that the redundant products of a hi-tech economy should end up in parts of the world too poor to protest: "Toxic waste will always run downhill on an economic path of least resistance," explains Jim Puckett, coordinator of the Basel Action Network (BAN), a global environmental campaign.

BAN's documentary film, Exporting Harm: The High-Tech Trashing Of Asia, released in December last year, reveals what happens at the end of the techno-waste line, in villages such as Guiyu. Sprawling mountains of wires are gathered and burned - in the open air - to liberate the metals from their plastic surrounds; computer and TV monitors are broken, by hand, to extract tiny amounts of copper; circuit boards, melted over coal grills, release valuable chips and toxic vapours. Leftover plastics are either burned, creating piles of contaminated ash, or dumped along with other processing residues in rivers, along irrigation canals or in fields. It is primitive, dangerous work. Poisonous waste creeps into skin and lungs and seeps into the land and water: Guiyu's soil contains 200 times the level of lead considered hazardous; the drinking water is 2,400 times over the World Health

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Authority (WHO) lead threshold. "We found a cyber-age nightmare," says Puckett. "They call this recycling, but it is really dumping by another name."

Since the film's release, European nations have signed a ban on toxic waste exports. However, there is no doubt that our frenzied trade in electronic goods is creating catastrophic levels of a particularly problematic type of trash. Known as waste from electronic and electrical goods (WEEE) in Europe and, less pedantically, as e-waste in the US, it is the fastest-growing form of rubbish across the western world. In Britain, we produce around 1m tonnes of e-waste each year, set to double by 2010. White goods contribute 43% of this figure, while IT is the next largest component at 39%. Consumer electronics are next on the list at 8%, with TVs accounting for most of that: we bin two million each year, and this will increase sharply as people switch first to digital, then to flatscreen sets. This waste stream lurched into the foreground in January this year, when we learned that mountains of discarded fridges were piling up in council storage, waiting to be processed in CFC extraction plants that had yet to be built. (The government hadn't reacted in time to a new EU law, requiring that CFCs be removed from the foam in fridges prior to their disposal.) The most striking thing about this scenario, apart from the administrative sluggishness that created it, was the sheer volume of the pile-up: between January and June this year - the month the processing plants finally went into action - around 1.3 million fridges were amassed.

Electronic goods, once durable items that would be passed down the family tree, are now disposable components of a throwaway culture. Labour and materials are underpriced, while technology rushes electrical appliances into obsolescence, constantly putting goods out of date, or creating the impression that if you don't keep up, you will be. These factors collide to create a market where it is cheaper and easier to buy new and more often, as anyone who has tried to upgrade a computer or repair a toaster will testify. Meanwhile, market saturation of now standard domestic goods - virtually all households have fridges, TVs and washing machines - has prompted a shift in our perception of electrical items, from nondescript appliances to fashion-driven artefacts. "It's the makeover culture that we've seen in the past 10 to 15 years," says Erika Calvo, environmental sociologist at the University of East London. "If your fridge doesn't look right, you change it."

Of the mountains of discarded electrical goods we generate, only a fraction are given a second life. Resale outlets are small and, with no regulating standards to guide us, we're suspicious of the second-hand market for products with an electrical current. There are schemes that redistribute working appliances to low-income households, but still too few of them. Meanwhile, the IT recycling market is flourishing, but not fast enough to cope with computer obsolescence. "If you've got a low-end Pentium II or less, even the charities wouldn't want it," says David Walker,

managing director of Tech Waste, an IT recycling company. Britain does have a good trade in scrap metal; a washing machine will yield about 50p-worth of steel, which makes it just about worth the effort. But when you factor into the equation anything that has a plug or a battery - from cookers to electric toothbrushes and musical socks - around 90% of e-waste currently ends up buried or burned.

Both these methods are bad news. Electrical goods comprise an unholy mix of heavy metals, of the sort that shouldn't be placed anywhere near soil, water or living things. Some examples: lead, a soldering agent, and also used in cathode ray tubes in computer and TV monitors; cadmium, found in plastics; mercury in switches and lamps; arsenic in circuit boards - all toxic and, in some cases, known carcinogens. Also, plastics and flame-retardants (which coat electric appliances) release chlorine and dioxins when burned or exposed to water. "We don't know the impact of long-term, low-level exposure to these substances," says Dr Paul Johnston, principal scientist at the Greenpeace International Research Laboratory. "Any process that puts them into the environment should be treated with a great deal of suspicion."

But what else can be done? Electrical goods are not easy to dispose of, quite simply because they aren't designed to be. These products are multiple hybrids of metal, plastic, glass and composite components: a video recorder, for example, is mainly plastic, while a TV, placed in the same waste category, is mainly glass, and a computer is a jumble of everything. Dismantling these goods is therefore both costly and cumbersome: "It's a bit like unbaking bread back to its ingredients," says Gary Griffiths, environmental manager for computer refurbishers, RDC, who has spent the past decade looking at this issue.

Even getting these goods into a recycling system in the first place is troublesome. Big retailers run take-back schemes to pick up old appliances (not fridges, currently) when they deliver new ones, but such sales account for less than 50% of the market. Local authorities will collect large items, but can take weeks and charge anything up to £30. Conscientious car-owners may drive unwanted electrical goods to the nearest civic amenity site, aka, the tip, but the dumped cookers and computers found on the streets of any large city would indicate that fly-tipping, although illegal, is a popular route.

It's one hell of a mess to clean up, but impending Euro regulations mean that we're going to have to. In October, the European parliament passed a fistful of laws - to take effect from 2004 - banning untreated e-waste from landfill, banning most hazardous materials from electronic goods, setting recycling and recovery figures for e-waste and, crucially, shifting the onus of waste-disposal on to the producers of these goods. Environmental campaigners think the reforms innovative, far-reaching and likely to prompt a tectonic shift in recycling culture. This being European legislation,

however, it is also dense, vague and brain-crushingly dull for anyone not involved with or avidly interested in the fate of electronic waste. Even then, it's a stretch: "The directive is long-winded, bureaucratic and time-consuming," says Mike Childs, policy adviser for Friends Of The Earth, adding that the laws have been in discussion for more than eight years.

The murkiest and most debated aspect of the WEEE directive is the area of producer responsibility, itself a radical principle in that it shifts accountability to the creators, rather than the consumers, of electronic goods. "Taxpayers have historically picked up the waste disposal burden, and so the EC is now passing the buck - quite literally - to producers," says Griffiths. Doubtless, the producers will pass the buck straight back to consumers, but the theory is that if producers have to pay for collection and proper disposal of their products, they then have a strong financial incentive to design electrical items with this objective in mind.

Everyone agrees that producers should, by way of a cross-subsidy, collectively pick up the tab for old or "historic" waste. Financing for disposal of future waste, however, was the main problem. Both industry and environmental groups were, perhaps for the first time, united in approval of individual responsibility, arguing that if producers aren't separately held to account for their brands, the competitive incentive to develop eco-friendly technology is thrown away. A joint statement from European NGOs and electronics companies, including Apple, Fujitsu, ICL plc, Nokia, Sanyo and several industry groups, urged the EC to "support financing on an individual basis". European parliament agrees; only the UK tried to block it. While accusations of monolithic thinking, typical British belligerence and a pro-business bias abounded, the government's response was that it was fighting for flexibility. A spokesperson at the DTI said, "We are against compulsory IPR [Individual Producer Responsibility], which we believe would restrict the freedom of obligated companies to decide for themselves the approach that suits them best." DTI officials added that small electrical goods companies (the musical sock makers?) were not represented by the industry bodies that lobby on this issue.

Despite British objections, individual responsibility was built into the WEEE directive agreed in October. It will affect every permutation of how products are collected, tracked and treated, not to mention by whom and at whose expense.

The difference of approach between Britain and the rest of Europe is consistent with the UK tradition of underpinning recycling measures with economic incentives, in contrast to the European social-democratic model of recycling as an obligation. Norway, for example, is already meeting the WEEE targets on recycling, while Britain sits at the bottom end of European recycling league tables.

Either way, producer responsibility is a new parameter of thinking. In practice, this could go beyond the level of simply

making electrical items easier to dismantle, a process that Griffiths describes as "using clips instead of bolts, screws and not glues". It may herald a shift in the focus of technological design, from fast, compact and funky to resource-friendly and reusable. "We already have initiatives, such as recycling of plastics in PlayStations, use of PET [Polyethylene Terephthalate - plastic] bottles in new products, and technology research such as plastics identification to improve recycling," says Dr Kieren Mayers, manager of the Sony Environmental Centre, Europe, who was banking on incentives for design which would enable them to go further. According to Melissa Shinn, policy adviser at the European Environmental Bureau (EEB), one possible outcome will be that, presented with the potentially cumbersome obligation of a goods disposal process, producers will track appliances in a completely different way. "It could lead to a shift from product to concept, so that you buy the service of, say, watching TV and not the actual TV. It would de-link the economy of business from material use to service use," she says.

But there are criticisms of the WEEE directive as well as rosy future scenarios. The recycling targets to eliminate e-waste from landfill, although a welcome principle, are an area of contention. These targets, effective from January 2006, require that 75% of e-waste is recovered (ie, not landfilled), of which 65% should be recycled. That isn't good enough, according to some. "Given that the amount of WEEE is set to double by 2010, this means that the same amount now being disposed of to landfill and incineration may continue," says Griffiths. Moreover, the shortfall between recycle and recovery figures leaves 10% of e-waste that must be collected, cannot be used as landfill and does not have to be recycled. That's pretty much a green light to burn it.

"We don't want any excuse for member states to be justified in increasing incinerator capacity, which is a long-term commitment and will divert funding from recycling," says Melissa Shinn of the EEB. Arguably, a total ban on landfilling or burning e-waste would have been a better solution, although Griffiths suggests a reason why this route has not been taken: "I have been told by civil servants in Brussels that the political imperative is to have measurable targets," he says. "A 100% ban is not a measurable target." Which is just Eurospeak, I take it, for a ban is not politically possible.

Indeed, some have argued that the focus on recycling is misguided: there is little point in amassing recycled material unless there is a tax incentive or a legal obligation to use it (a law imposing the latter is in the EU pipeline). Tim Cooper, head of the Centre for Sustainable Consumption, says that recycling may even reinforce a throwaway culture by signalling that it is OK to discard and replace with frequency. "Through recycling, industry can say, 'We have an environmental mission and policy', and still carry on perpetuating the growth in consumption," he says. Cooper thinks that the WEEE directive missed an opportunity to

impose life-span labelling requirements on the electronics industry. Such a measure would let consumers differentiate more accurately between, say, a cheap toaster and a top-of-the-range Dualit. There would then be some emphasis on durability, which is far higher up the list of good green practice.

A perverse effect of the imminent WEEE directive is that, as more material is collected for recycling, it may create a greater demand to export e-waste illegally, to a weaker economy for dirty recycling. This, according to BAN, has been the experience in the States. European nations have signed a total ban on toxic waste exports - the US refuses to do so - but there are doubts as to whether it is being enforced. A spokesperson for the Scottish Environmental Protection Agency says: "We know of companies who may be doing that type of business." Since Europe agreed to stop exports, the BAN team has been back to China and reports that, while most e-waste comes from the US, it is still "flowing out of Europe". (BAN suspects that European waste more often ends up in India and Pakistan.)

The worry is that customs officials are not yet aware of the definitions of hazardous waste, and that the infrastructure to check all seagoing containers does not exist. "So much harm has come under the green passport of recycling," says Puckett. "Whenever someone says that word, it has the effect of making people swoon and think that everything is going to be lovely." In places such as Guiyu, everything is far from lovely.

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Waste and pollution

Net notes
11.07.2002: Rubbish
01.08.2002: Rats

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Government 'are you doing your bit?' recycling campaign
Community Recycling Network
Waste and Resources Action Programme
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