

# Electronics Industry - Milestones on the Road to Greener Electronics

Progress in the electronics industry following the release of the *Guide to Greener Electronics* up to the end of 2010

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The *Guide to Greener Electronics* has created a dynamic process of change in the electronics industry, which has made significant progress towards products that are free from hazardous substances and towards voluntary take-back of its end-of-life products globally. Exact comparisons between the first edition, launched in August 2006, and version 16, in October 2010, are difficult, as many of the criteria have changed and been applied more stringently in later versions of the Guide; however, major changes and trends are still apparent despite this.

On **Chemicals** a transformation has taken place with commitments from almost all of the companies to phase out polyvinyl chloride (PVC) and brominated flame retardants (BFRs), which has led to the introduction of many PVC and BFR-free products. This has been particularly noticeable for mobile phones and PCs, with less progress having been made on TVs.

Even though several companies have had to revise their original target dates to phase out the most hazardous substances, there are considerably more products on the market today than when the first edition of the *Guide to Greener Electronics* was launched. Companies are in the process of translating these commitments into products on the market, beginning with individual components or a few niche products and extending to the complete phase out of PVC and BFRs (halogens) from whole product lines.

Mobile phones have shown the most progress, with most of the market leaders now producing halogen-free mobile phones, making up at least 60% of the market in 2011<sup>1</sup>, followed by PCs, where the phase out plans of the market leaders mean that at least 53% of the market will be halogen free in 2012. Clearly the technical barriers to phasing out PVC and BFRs have been mostly overcome; the Industry Association INEMI has published a timeline that shows that halogen free components for PCs (notebooks and desktops) will be widely available in the supply chain by the end of 2011, including the evaluation and qualification of parts for high performance printed circuit boards and power cords<sup>2</sup>. TV manufacturers have shown the least progress; the remaining stumbling block being the availability of PVC and BFR-free components throughout the supply chain. Only 21% of the TV market is projected to be PVC/BFR free in 2011, and depends on companies meeting their commitments.

Tables follow that give a snapshot of the progress that has been made up to October 2010. Companies will be monitored closely as the dates for implementing many of these commitments approach.

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<sup>1</sup> The source of market share data for the products is as follows:  
Gartner Says Worldwide Mobile Phone Sales Grew 35 Percent in Third Quarter 2010; Smartphone Sales Increased 96 Percent, <http://www.gartner.co.uk/it/page.jsp?id=1466313>  
Gartner Says Worldwide PC Shipments Grew 7.6 Percent in Third Quarter of 2010  
[www.gartner.co.uk/it/page.jsp?id=1451742](http://www.gartner.co.uk/it/page.jsp?id=1451742)  
ECN, Q2'10 TV Shipments Show Continued Growth, But Some Regions Weakening, DisplaySearch  
<http://www.ecnmag.com/News/2010/08/Q2%E2%80%9910-TV-Shipments-Show-Continued-Growth,-But-Some-Regions-Weakening/>

<sup>2</sup> INEMI Timeline for HFR-Free Electronics and PVC-Free Cabling for Notebook and Desktop Products, October 2010, [http://thor.inemi.org/webdownload/projects/ELSC/HFR-Free\\_PVC-Free\\_Timeline.pdf](http://thor.inemi.org/webdownload/projects/ELSC/HFR-Free_PVC-Free_Timeline.pdf)

## Table 1: Progress on commitments to phase out PVC and BFRs

### v.1 – August 2006

5 out of 14 companies had acted on PVC or BFRs or made commitments to phase them out.

Nokia: Phase-out of PVC almost complete. However, timelines missing on some applications of BFRs.

Sony Ericsson: Elimination of BFRs in boards and casings of first SE phone, in 2002; timeline for eliminating PVC to be announced by end of 2006.

Dell: timeline of 2009 for BFRs and PVC (circa June 2006).

Samsung: Samsung commits to eliminate BFRs by end of 2010, PVC by 2011.

LGE: LGE commits to eliminate BFRs and PVC by end of 2010.

### v.16 – October 2010

All 18 companies make statements about their plans to phase out PVC and BFRs.

Out of these, a total of 13 companies have a credible commitment to phase out PVC and BFRs in some or all of their products, with a timeline.

6 have committed to phase out PVC and BFRs from their entire product range; three of these – Sony Ericsson, Nokia and Apple – have already achieved this objective. Philips, Sharp and Lenovo are still working towards their objectives.

A further 7 companies have made partial commitments; for example Panasonic's phase-out of BFRs is for mobile products only and HP's phase-out of PVC and BFRs is limited to computing equipment, as is Dell's. Other companies with limited commitments are HP, Samsung, Motorola, Sony, and Acer. Several companies have been served with penalty points in the Guide for failing to meet their original commitments; some have extended their deadlines and reduced the scope of products.

Commitments by three companies need further clarification:

- Microsoft previously had a timeline of 2010 for PVC and BFRs, this has been extended to 2012 for BFRs and phthalates but the status of PVC is not clear.
- Although Toshiba has a commitment to phase out PVC and BFRs from all products by April 2010, it hasn't fulfilled this commitment and has not set a new target.
- LGE committed to phase out PVC and BFRs from its mobile phones by 2010, but by October 2010 only one mobile phone was free of these substances; since then it has informed Greenpeace that all new mobile phones are now PVC/BFR-free. LGE has other commitments to phase out PVC and BFRs in TVs, monitors and PCs by 2012.

Only 2 companies have not identified a phase-out date for PVC and all BFRs; Fujitsu does not commit to phase out all BFRs and although Nintendo does aim for rapid phase-out of PVC and BFRs, no timeline is given.

## Table 2: PVC and BFR-free products on the market

v.1 – August 2006

Nokia: Phase-out of PVC almost complete.

Sony Ericsson: Elimination of BFRs in boards and casings of first SE phone, in 2002

v.16 – October 2010

### Mobile phones

Sony Ericsson stands out as the first company to score top marks on all the chemicals criteria. Since January 2008 all of its mobile phones have been virtually PVC and BFR-free.

Nokia's new mobile phones are also PVC and BFR-free from beginning of 2010.

Samsung mobile phones and MP3 players are free from PVC/BFRs from April 2010.

Toshiba's mobile phones launched after January 2010 are free from PVC/BFRs.

All Motorola phones are PVC-free and two are PVC/BFR free.

### Computers

Apple was the first PC maker to produce PCs without PVC or BFRs; products have been virtually PVC/BFR-free since January 2009 and all of its products are now PVC and BFR-free.

Whole PC systems that are free of PVC and BFRs have also been brought onto the market by HP, who now has several lines of notebooks, desktops and most recently a PVC-free printer, Acer and the Indian companies Wipro and HCL, (with the exception of PVC-free power supply in some systems for some geographies).

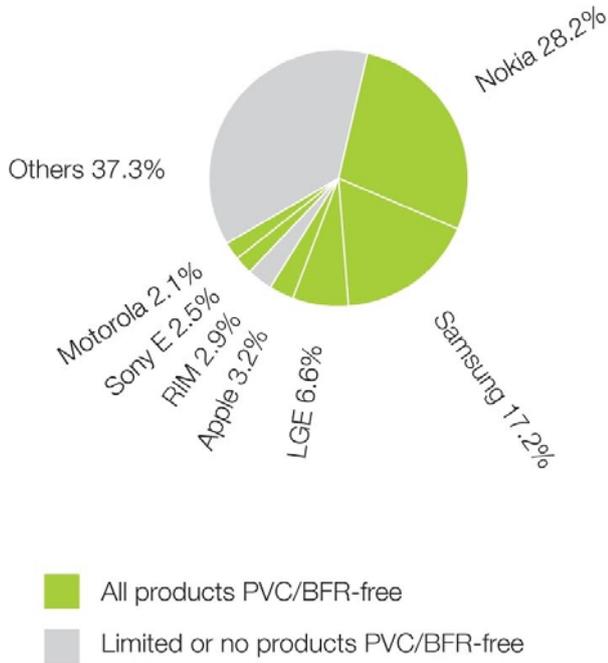
In contrast Toshiba, LGE, Samsung, Dell and Lenovo still have no whole PC product systems free from these substances.

### TVs

Philips launched the first TV to be free of PVC and BFRs in September 2010 in Europe.

Table 3

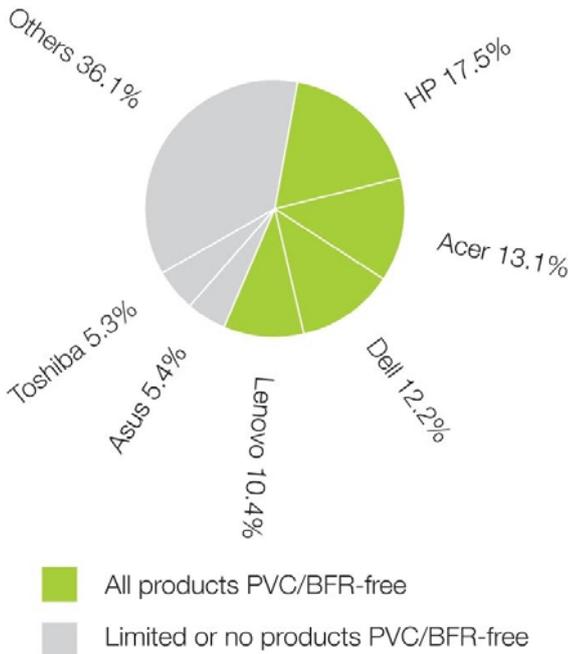
Projected global market share of PVC/BFR-free mobile phones in 2011 = 59.8%



<b>Nokia</b>	All PVC and BFR-free	
<b>Samsung</b>	All PVC and BFR-free from April 2010	
<b>LGE</b>	All new mobile phones are PVC and BFR from 2010 although information about these is limited.	
<b>Apple</b>	All PVC and BFR-free	
<b>RIM</b>	No information	
<b>Sony Ericsson</b>	All PVC and BFR-free	
<b>Motorola</b>	All PVC-free in 2010	BFR-free from 2011

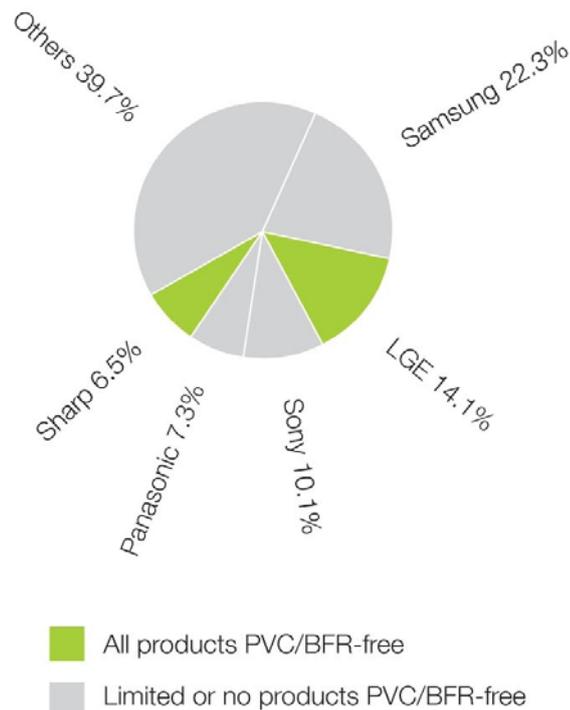
Table 4

Projected global market share of PVC/BFR-free PCs in 2012 = 53.2%



<b>HP</b>	Phased out PVC/BFRs in many product systems during 2011, on target to complete phase-out by end of 2011	
<b>Acer</b>	Phased out PVC/BFRs in several product systems during 2011, on target to complete phase-out by end of 2011	
<b>Dell</b>	On target to complete phase-out by end of 2011	
<b>Lenovo</b>	On target to complete phase-out by end of 2011	
<b>Asus</b>	States that in 2009 it phased in halogen-free manufacturing processes, no phase-out plan for products	
<b>Toshiba</b>	Phase out date of April 2010 not achieved, no new timeline for phase-out has been set	

Table 5  
 Projected global market share of PVC/BFR-free TVs in 2012 = 20.6%



<b>Samsung</b>	No longer has a commitment to phase out PVC/BFRs in TVs (previously, end of 2010)
<b>LGE</b>	PVC and BFRs will be banned from TVs and monitors developed by 2012, although commitment needs clarification.
<b>Sony</b>	No commitment to phase out PVC/BFRs in TVs
<b>Panasonic</b>	PVC internal wiring only by March 2011
<b>Sharp</b>	Commits to eliminate all PVC and BFRs from all products by end of March 2011
<b>Others</b>	Philips has an example of a PVC/BFR-free TV

On **e-waste**, most of the companies have adopted policies that support Individual Producer Responsibility (IPR), to a greater or lesser extent. However, there is still a long way to go on the implementation of IPR through their own take-back programmes. Dell was an early leader on take-back, being the first company to announce a global take-back programme in January 2007, although it is still in the process of implementing this. Nokia is now the best performer on global voluntary take-back for its own-branded obsolete products, having extended its programme to cover 85 countries, with almost 5,000 collection points so far. Five other companies – Motorola, Dell, Apple, Panasonic and Lenovo – have also scored well for their voluntary take-back programmes in Version 16 of the *Guide to Greener Electronics*.

However, many companies only offer take-back for a limited range of their products and their progress in extending their take-back programmes into non-OECD countries has been slow. For example, the only take-back programme specifically for TVs in a non-OECD country was launched in 2010 by Panasonic.

### Table 6 - Individual Producer Responsibility

v. 1 – August 2006

7 out of 14 companies have policies supporting IPR or EPR

v. 16 – October 2010

15 out of 18 companies have policies supporting IPR, with seven of these also proactively advocating for IPR. Only Apple, Toshiba and Nintendo have no clear definition of IPR

## Table 7 - Take-back programmes

### v. 1 – August 2006

10 out of 14 companies have take-back programmes in countries without take-back legislation, for limited product types, mostly in the US, Canada, Australia and China. 2 companies, Nokia and Dell, have more extensive take-back

### v. 16 – October 2010

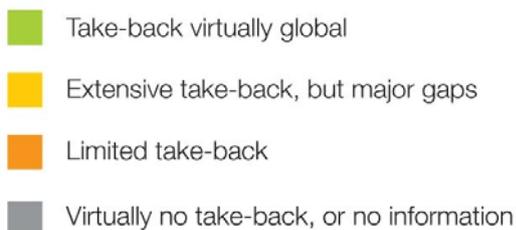
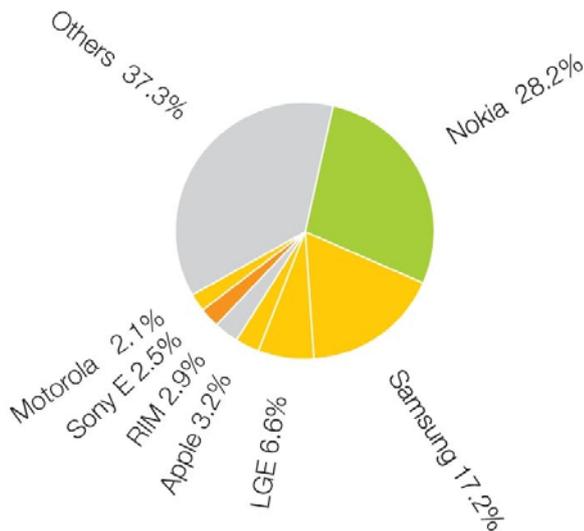
All 18 companies have take-back programmes of some sort in countries without EPR laws. Of these, 13 are extensive enough to score points. 6 companies have reasonably good take-back programmes in non-OECD countries and 1 company, Nokia, has take-back that is virtually global.

The following tables show the extent of companies' take-back programmes in relation to their market shares. It shows that take-back for mobile phones has the best coverage, mainly as a result of Nokia's global take-back programme, which covers 28% of the market, with a further 32% covered by other companies with more limited programmes. This is followed by PCs, where take-back programmes for at least some countries are in place for 45% of the market. TV's fare the worst, with take-back only offered in India by two companies.

Note: the assessment in the following tables of the companies' take-back programmes on individual product groups (mobile phones, PCs and TVs) may not reflect the score given for take-back in the *Guide to Greener Electronics*, which is a combined score assessing take-back programmes for all of a company's product groups.

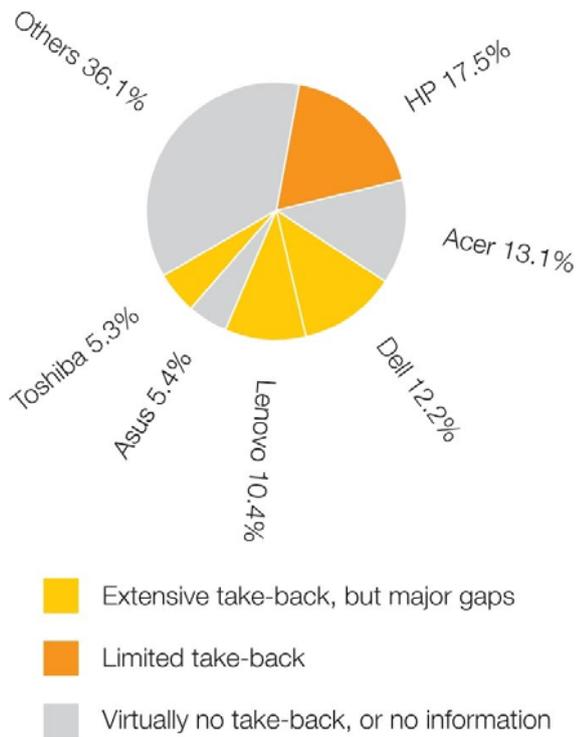
Table 8

Extent of global take-back programmes in non-OECD countries for mobile phones in 2010



<b>Nokia</b>	Virtually global take-back of mobile phones
<b>Samsung</b>	Non-OECD take-back includes many Asian and Latin American countries, plus South Africa and Russia. Nothing in rest of Africa or Middle East
<b>LGE</b>	Non-OECD take-back in many Asian and Latin American countries, Russia and Israel, but nothing in Africa or rest of Middle East
<b>Apple</b>	Take-back in countries where 95% of its products are sold; non-OECD countries include many in Asia, plus Brazil. Nothing in Africa, Middle East or rest of Latin America
<b>RIM</b>	No information
<b>Sony Ericsson</b>	Non-OECD take-back programme not yet extending beyond a few Asian countries and Israel, although programme is expanding
<b>Motorola</b>	Take-back programme in 72 countries, representing over 90% of global mobile phone sales. Gaps still in Africa

Table 9  
Extent of global take-back programmes in non-OECD countries for PCs in 2010



**HP** Take-back programmes in 46 countries, non-OECD include China, Costa Rica, India and South Africa, major gaps in Latin America and Africa

**Acer** Only provides take-back where required by EPR laws, with exception of India where it offers free take-back

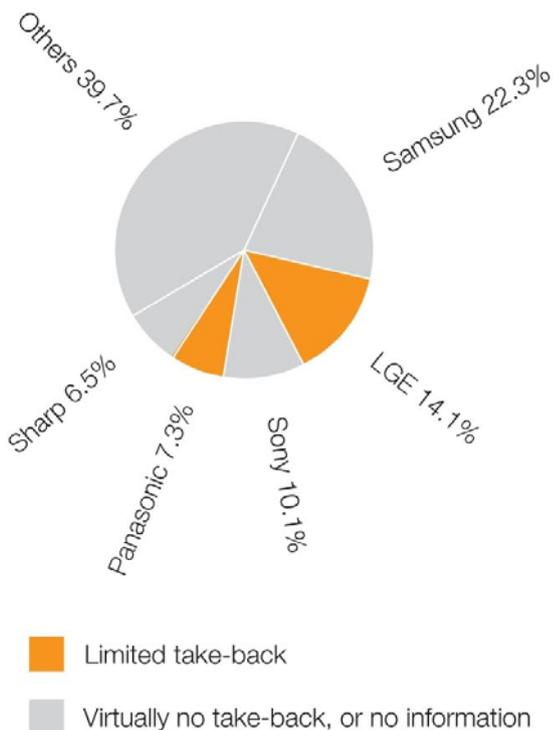
**Dell** Striving for free global voluntary take-back service that currently extends to 60 countries including India, Malaysia, Columbia, China (Hong Kong), Mexico, Brazil, Chile, Middle East, South Africa, although most of Africa not covered

**Lenovo** Offers voluntary take-back in 22 countries (52 in total), although major gaps in Africa and Middle East

**Asus** Only offers voluntary take-back in US

**Toshiba** Voluntary take-back of PCs covering 80% of PC sales in China, Singapore, Thailand, India, Pakistan, Myanmar, Cambodia and many other Southeast Asian countries, but Africa, Middle East and Latin America not included

Table 9  
Extent of global take-back programmes in non-OECD countries for TVs in 2010



**Samsung** No voluntary take-back programmes for TVs beyond the US

**LGE** Has initiated a take-back programme for its products in India, although TVs are not specified

**Sony** No voluntary take-back programmes for TVs beyond the US

**Panasonic** Panasonic India has launched voluntary take-back for TVs in three cities in India, plans to expand this to other cities

**Sharp** No voluntary take-back programme for TVs beyond the US

## Amounts recycled

A Greenpeace report '*Not in Our Backyard*'<sup>3</sup>, published in February 2008, looked at the amount of e-waste recycled by PC and mobile phone manufacturers through take-back programmes. The figures provided by four PC producers (HP, Dell, Apple, Lenovo) suggested that, at that time, global responsibility was taken for between 8.8% to 12.4% of own-branded end-of-life products that were available for collection and recovery; these producers had also developed take back and recycling activities within certain quality standards. Recycling rates for own-branded mobiles were much lower, at about 2-3%.

- *This information meant that for those few brands reporting on the collection and recycling of their own-brand PCs and mobile phones as a percentage of past sales, the 'hidden flow' of e-waste branded products currently amounts to an average of 91% of past sales.*

## Recycled quantities from company take-back reported in 2010

Only a few companies report the quantities of e-waste recycled as a percentage of their global past sales; for PCs, these are Lenovo (6.39% in 2008), HP (16% in 2009), Toshiba (20% in 2009) and Apple (66.4% in 2009), which is a big increase from the rate of 8.8% to 12.4% reported in 2008.

There is less of an increase for mobile phones; Motorola reports a recycling rate of 2.5% in 2009 (based on sales two years ago) and Sony Ericsson reports 5%. However, companies that report for a more limited geographical range fare slightly better; Samsung reports 9% and LGE 11%; both figures are based on sales in Europe, Japan, Korea and North America two years ago in 2008.

- *This information means that for those brands reporting on recycling as a percentage of past sales, at least 90% of obsolete mobile phones are not being accounted for by the individual producers, as of 2009. The global figure for PCs not being accounted for is an average of about 73% (based on the global figures above).*

For TVs, only one company publishes a global recycling rate; Toshiba reports that 36.1% of sales 10 years ago were recycled in 2009.

With the possible exception of Apple, higher rates of recycling are more easily achieved in countries with EPR legislation; for example Sony, reported a recycling rate of 53% for fiscal 2006 in Japan, where WEEE legislation is in force, which has now increased to 88% in fiscal 2009, for both PCs and TVs. This shows that higher take-back and recycling targets can be achieved with a combination of government legislation and company practice.

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<sup>3</sup> [www.greenpeace.org/international/en/publications/reports/not-in-our-backyard/](http://www.greenpeace.org/international/en/publications/reports/not-in-our-backyard/)