THE NATION'S CAPITAL AND HP

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Sustainability Through Design: The Life Cycle of an HP Product

From <u>soup to nuts</u>, HP products are designed with sustainability in mind. Every physical product we sell, from computers to servers to printers, aims for <u>energy efficiency</u> and easy <u>recycling</u>, and our processes limit the impact of distribution. With computing technology more widespread than ever, it is our responsibility as a technology manufacturer to ensure that we reduce environmental impacts across our product life cycle.

The chart below comes from the HP Global Citizenship Report for FY 2009. <u>Click here to read more about HP's practices.</u>

PRODUCT

LIFE CYCLE

DESIGN

- Design for Environment (DfE) standards help products meet regulatory and customer requirements.
- Eco-labels demonstrate conformance with international environmental expectations and green procurement criteria.
- DfE techniques increase materials and energy efficiency and create more product and portfolio functionality with the same or reduced environmental impact.
- Recycled content reduces the use of virgin material.
- Design for recyclability features can facilitate disassembly and recycling.

END OF LIFE

- Take-back options can divert waste from landfill, including asset recovery, donation, leasing returns, remarketing/ refurbishment, trade-in and recycling.
- The ability to easily identify product materials can facilitate recycling and increase value at end of life.
- Design features can increase ease of disassembly, recycling and material reuse.

USE

- Efficient product design, longer battery life and enhanced power management decrease energy consumption and reduce climate impact.
- Multi-function products generally reduce energy and materials use when compared with using several one-function products.
- Energy-saving product features may reduce total cost of ownership.
- HP printing products can help optimize energy and ink efficiency and provide reliable, high-quality performance, reducing paper waste.
- Products designed for reliability and upgradeability extend functional lifetime, saving IT rollover costs and reducing waste.

RAW MATERIALS

- Materials reduction and use of recycled materials decrease virgin materials use.
 Reduction in the number of different
- material types used in a single product may help enhance recyclability and add value at end of life. • Reduction in product size and weight
- Reduction in product size and weig decreases resource use.
 Postulad materials area virgin materials
- Recycled materials save virgin materials and divert waste from landfill.
 Substances restricted by HP's General
- Substances restricted by Hr's General Specification for the Environment are reduced or eliminated.

MANUFACTURING

- Supplier Code of Conduct helps suppliers to address key HP environmental requirements, including the General Specification
- for the Environment. • Design for recyclability features typically enable easier product assembly.
- Efficient operations reduce energy use, greenhouse gas emissions and waste from HP's and our suppliers' operations.
 Global ISO 14001 certification of
- HP manufacturing facilities helps establish effective environmental management processes.

DISTRIBUTION

- Smaller, lighter products decrease greenhouse gas emissions and costs from transportation.
- Improved packaging designs increase the number of products per pallet and reduce packaging weight, decreasing product transport environmental burden.
- Ocean and rail transport allow for more energy-efficient shipments.
- Participation in several initiatives, including SmartWay, promotes indus
- including SmartWay, promotes industry wide reduction in environmental impacts from product transport.

Learn more about HP's use of technology to improve the environment in this conversation between Steve Howard, CEO of The Climate Group, and Engelina Jaspers, VP of Environmental Sustainability.





Sustainability: Supply Chain Accountability



With Congress considering legislation regarding the purchase of "conflict minerals" in Central Africa, HP would like to highlight activities on the industry front to address this challenging problem.

Although the electronics industry can't solve this issue alone, HP believes we can address sourcing of conflict minerals through extension of our existing efforts. HP's <u>Supply Chain Social and</u> <u>Environmental Responsibility (SER) Program</u> was

launched in 2000 - the first of its kind in our industry. HP has long been accountable for our product materials and manufacturing suppliers' SER performance. We have built a commitment to SER among this supplier base and have begun to tackle the toughest challenges in the supply chain. In 2007, HP became the first company in our sector to disclose its list of suppliers. Fundamentally, we expect our suppliers to conduct their operations in a manner that does not result in labor or human rights violations and that includes operations which contribute to the direct financing of armed conflict.

In keeping with our history of <u>supply chain social and environmental</u> <u>responsibility</u>, HP is working to ensure that our products do not contain metals sourced from mineral trade financing the armed conflict in the Democratic Republic of the Congo (DRC). We will take further steps to educate our own supply chain by developing an approach to validate the assurances from our own suppliers.

How our and other industries that use minerals found in the DRC can continue to drive transparency in our supply chains is, without a doubt, a large challenge. The <u>Electronics Industry Citizenship</u> <u>Coalition</u> and the <u>Global e-Sustainability Initiative</u> (GeSI) have working groups and projects aimed at better understanding and developing systems of assurance for metals' supply chain in the electronics sector (especially tantalum). Other efforts exist within specific metal industries like tin, as well as the jewelry sector and the mining industry itself. At some point, these efforts will need to unite, helping all of us bring an effective, workable solution for sourcing minerals.

We will continue to work with our sector, governments, and other industries using minerals from the region to develop an effective, cross-industry solution.



Sustainability of the Future: Photonics Beginning Use

Last month's issue of "<u>The Nation's Capital and HP</u>" noted the burgeoning field of photonics — servers that use optical light instead of copper to transfer information. The lower resistance results in less energy use, even as processing speed and performance increases, making incorporation of photonics a key to the sustainable data centers of the future. Given the nation's and world's focus on reducing energy use wherever possible along with the benefits and energy efficiencies IT can provide more efficient servers are a key component of meeting worldwide emissions goals.

As the need for servers grows, power efficiency is one of the most direct ways HP can impact our carbon footprint. We've developed waveguide technology that transmits light, repurposing injectionmolding systems to create the pathways for information.

HP was the first company to develop a <u>working photonics prototype</u>. By eliminating copper wire, communication among server blades is more powerful than ever, with 10,000 times the data transmitted per unit of power. Computing technology powered by photonics will be more flexible, allowing sharing of multiple components simultaneously.

Ultimately, HP sees a sea change in motherboard design in the future. These advancements are key to improving power efficiency in our ever-more-connected world.

HP In the News: Web-Enabled Printers

Do you store documents in the cloud that you'd like to send not where you are, but where you'll be? Do you wish you could print a briefing memo automatically in the middle of a conference or meeting? Or perhaps you need an immediate hardcopy of a key piece of data housed in your smartphone. Whether the use is for business or entertainment, HP's new web-enabled printers allow you to leverage the ever-growing cloud-based networks of today to get your digital content onto paper in a more convenient way.

In June, HP unveiled its new web-enabled printers powered by print apps and ePrint – so, if you can email it, you can print it. Every HP ePrint printer will have a unique email address that allows the sender to queue up a print job the same way they would send an email message. Any printer in HP's new printing portfolio starting at \$99 will provide customers an <u>easy way to</u> <u>print their content, anywhere, anytime</u>.

HP in the Community

Last year, the Klein (TX) Independent School District received an HP Innovations in Education grant of over \$265,000 to study potential for online collaboration in science education. Promoting interest and expertise in the sciences will enhance our nation's workforce and fuel the innovation economy.