August 2021

Analysis of Top Printer OEM Cartridge Take-Back and Recycling Programs

Objective

In June 2021, Keypoint Intelligence was contracted by HP to conduct a study to determine if the HP Planet Partners printer cartridge take-back and recycling program could be considered:

- #1 printer supplies recycling program[1]

- World's #1 printer supply recycling program[1]

- Leading recycling program for printer supplies[1]

- Best in-class OEM printer supplies recycling program[1]

The research team at Keypoint Intelligence evaluated the printer cartridge and corporate sustainability programs of Brother, Canon, Epson, and HP on five different pillars to determine which program and company leads the industry in supplies recycling[1]. Based on publicly available information, Keypoint Intelligence analysts found the HP Planet Partners Program to perform strongest and offer the best in-class OEM printing supplies recycling program[1].

[1]Compared to majority of competing in-class OEM ink and laser printer supply recycling programs. Criteria: size, reach, recycled and upcycled content, eco award/ranking. HP-commissioned August 2021 Keypoint Intelligence research report. Market share: IDC CQ1'21 Hardcopy Peripheral Tracker. Program availability varies. See hp.com/go/recycle and keypointintelligence.com/HPPlanetPartners

Background

Choosing sustainable practices and partners is no longer just a business choice reflecting company priorities, it's also the subject of public policy changes at the national and local level such as the EU Circular Economy Action Plan[2]. People and technologies are evolving, populations are growing, and unbridled manufacturing could cause irreparable harm to the planet and its inhabitants[3]. As the Earth's resources are used to create new products, it's become imperative to be transparent about the footprint of business operations and commit to solutions and standards to benefit the planet.

Manufacturers in the document imaging industry are tackling green and sustainable initiatives to combat resource depletion, climate change, pollution, and ecosystem disruption or destruction. Many industry standards have emerged, including ecolabels and awards like Blue Angel, ENERGY STAR®, RoHS, WEEE, and EPEAT which seek to provide guidelines to increase energy efficiency, reduce emissions, reduce toxic materials, and set recycling and recovery targets. In addition, many manufacturers have developed their own internal goals for improved sustainability, like designing products for easy recycling via free-to-customer take-back and recycling programs or creating products from recycled or upcycled materials. One vital component of these initiatives is the design and lifecycle management of print supplies. Ink and toner cartridges are typically plastic and contain chemical ingredients that will take a long time to degrade, and potentially cause concern if disposed of in a landfill or municipal waste. Thus, many printer and supplies OEMs are seeking to make supplies out of environmentally friendlier materials, as well as make the collection of end-of-life printer cartridges extremely easy for customers so they can be recycled rather than thrown away.

[2] See: https://ec.europa.eu/environment/topics/circular-economy_en and https://www.epa.gov/laws-regulations/laws-and-executive-orders

[3] See: https://www.nature.com/articles/d41586-020-02498-9 and https://www.theguardian.com/commentisfree/2019/jul/03/consumerism-isnt-a-sellout-if-capitalism-works-for-all

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Methodology and Findings

Keypoint Intelligence examined publicly available materials, such as Corporate Sustainability/Social Responsibility Reports (CSR) and OEM environmental impact websites, for evidence in five different research criteria: #1 size of cartridge take-back and recycling program, #2 the reach of program, #3 recycled content collected from program used in new OEM printer cartridges, #4 upcycling with waste generated by other industries in new OEM printer cartridges, and #5 corporate environmental awards and rankings.

Criterion #1: The size of program included cartridges collected in the last year and since the recycling program began, measured in metric tonnes and number of units. HP wins in three out of the four recycling program subsections, with the greatest annual (latest year) reported cartridge return in tonnes and units, and the greatest reported cumulative returned cartridges in units. Canon leads slightly over HP for greatest cumulative reported cartridges returned in tonnes with 396,902 tonnes compared to HP's 369,796 tonnes. Canon's program launched 1990, a year earlier than HP's program in 1991 according to HP[3]. Many manufacturers do not publicly post the data to assess the size of their program, or can only speak to larger programs they are members of, such as Cartridges 4 Planet Ark (C4PA) which does not give a specific breakdown by OEM.

[3] Canon's recycling program predates HP's: https://www.usa.canon.com/internet/portal/us/home/about/
environment-sustainability-initiatives/toner-cartridge-return-program

https://clean50.com/projects/hps-closed-loop-plastic-recycling-program/

Criterion #2: The reach of program describes the count of countries where the cartridge collection for recycling program is available. HP leads with take-back programs in 67 countries for toner cartridges and 59 countries for ink cartridges. Epson is second with 56 countries, Canon offers 35 countries, and Brother operates in 28 countries.

Criterion #3: The recycled content in new OEM printer cartridges pillar evaluated if there is recycled content in new OEM printer cartridges, new laser toner cartridges, or new ink cartridges. Keypoint Intelligence also considered the quality and quantity of recycled content in new OEM cartridges. Different types of recycled content have more environmental value. Typical recycled content is good, but post-consumer recycled content is more valuable, and ocean-bound plastic is considered the most valuable

type[4]. Closed Loop Recycling was also considered. It describes a recycling process through which a manufactured good is recycled back into the same or a similar product with very little waste or degradation. HP was the only vendor to report specific data points on recycled content, repurposing over 771 metric tonnes of ocean-bound plastics in HP ink cartridges, and using a closed loop recycling system.

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[4] Explaining the value of typical recycled content vs. post-consumer recycled content, and ocean bound plastic:

https://www.nrdc.org/sites/default/files/issue-with-tissue-2-report.pdf

https://www.ptonline.com/articles/trash-as-value-turning-ocean-waste-into-viable-products

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UL LLC is one of the world's leading safety science and certification companies. HP is the first company in the document imaging space with recycled content validation for ocean-bound plastics from UL, according to UL press release April 14, 2020. Per UL, HP is the first company to achieve validation from UL to the UL 2809 Environmental Claim Validation Procedure (ECVP) for Recycled Content Standard which now includes auditing of social responsibility procedures[5]. Keypoint Intelligence contacted UL to verify that as of July 1, 2021, HP is still the only company with this UL 2809 validation of ocean-bound plastic resin, and the only printer OEM using this resin in new ink cartridges. HP reports using over 19,139,400 pounds of post-consumer recycled content in their ink and toner cartridges in 2020. Since the program began, HP has used over 274,037,400 pounds of recycled content material in new cartridges. Other companies do not report publicly on recycled content in new printer cartridges, making this criterion a clear win for HP.

Criterion #4: Upcycling describes the process of transforming waste material to create a product of higher economic and environmental value or quality. For upcycling in new OEM printer cartridges, Keypoint Intelligence determined if the vendors described using recycled cartridges or other post-consumer waste for upcycling. The environmental value and quantity of upcycled material was also considered. HP was the only vendor to report upcycling, using more than 1.7 million pounds of ocean bound plastic, equivalent to nearly 5 billion plastic bottles, into new products. Since 1991, HP has also incorporated clothing hangers to be upcycled, keeping over 127 million units out of landfills.

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[5] UL 2809 Environmental Claim Validation Procedure, see ul.com/news/hp-receives-first-recycled-content-validation-ocean-bound-plastics-ul. Compared to the majority of competing in-class OEM's and their ink and laser printer supplies' recycled content. August 2020 report by Keypoint Intelligence - InfoTrends commissioned by HP Market share as reported by IDC Q2'20 Hardcopy Peripheral Tracker. Details at keypointintelligence.com/HPPlanetPartners

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HP has upcycled 1.7 million pounds (771 tonnes) of ocean-bound plastic for use in supplies and hardware, keeping 5.0 billion postconsumer plastic bottles out of landfills. In 2016, HP developed an ocean-bound plastic supply chain with the First Mile Coalition in Haiti to create more than 2100 local income opportunities for collection and washing of ocean-bound plastic bottles used in Original HP ink cartridges and has scaled its use of ocean-bound plastic across its portfolio. The strong data points from HP are a win for the company in this criterion.

Criterion #5: A count of the last two years of environmental awards and rankings was used to evaluate corporate environmental awards and rankings. Company cartridge accomplishments for take-back and recycling are considered when third parties grant corporate environmental awards. In scope for this study included awards and rankings from CDP, Dow Jones, FTSE4Good, EcoVadis, KnowTheChain, CR, ENERGY STAR®, World's Most Ethical Companies, Gartner, Corporate Knights, and Diversity Journal. For EcoVadis Gold Corporate Social Responsibility, HP is in the top 1% (2020), Epson is in the top 2% (2019), and Canon is in the top 5% (2018). For the KnowTheChain ranking, HP received second rank while Canon received 29th rank. HP has been awarded, ranked, or recognized in all of the additional categories listed, while Brother, Canon, and Epson have not been presented these environmental awards.

Considering the wins across all five research criteria, HP can make the following claims: #1 printer supplies recycling program[1], world's #1 printer supply recycling program[1], leading recycling program for printer supplies[1], and best in-class OEM printer supplies recycling program[1].

[1] Compared to majority of competing in-class OEM ink and laser printer supply recycling programs. Criteria: size, reach, recycled and upcycled content, eco award/ranking. HP-commissioned August 2021 Keypoint Intelligence research report. Market share: IDC CQ1'21 Hardcopy Peripheral Tracker. Program availability varies. See hp.com/go/recycle and keypointintelligence.com/HPPlanetPartners

Supporting Data Tables

Pillar	Criteria	Brother	Canon	Epson	HP
1. Size of Program	Cartridge Return Annual Tonnes (latest year)	Not Available	**10,083 Tonnes**	**1,800 Tonnes***	**10,796 Tonnes**
	Cartridge Return Cumulative Tonnes (total since program started)	Not Available	**396,902 Tonnes**	**53,000 Tonnes**	**369,796 Tonnes**
	Cart Return Annual Units (latest year)	Not Available	Not Available	Not Available	**41 M units**
	Cartridge Return Cumulative Units (total since program started)	**>15 Million units**	Not Available	Not Available	**916 M units**
2. Reach of Program	Number of Countries	**28 Countries**	**35 Countries**	**56 Countries**	**67 Countries**
3. Recycled Content in New Printer Cartridges	Superior Recycled Content: Ocean-bound, Post-consumer, Third-party validated, Closed Loop	Not Available	Not Available	Not Available	**Yes: UL external validation, five resins for ink**
	Range of ocean-bound recycled content % in resins	Not Available	Not Available	Not Available	**5%-99% recycled content range of validated ocean bound in resins**
	Tonnes of Ocean bound post-consumer recycled plastic content	Not Available	Not Available	Not Available	**771 Metric Tonnes**

	First and only in-class with third-party OBP validation	Not Available	Not Available	Not Available	**Yes**
	Recycled Content in supplies Annual Pounds (latest year)	Not Available	Not Available	Not Available	**19,139,400 Pounds**
	Recycled Content in supplies Cumulative (total since program started)	Not Available	Not Available	Not Available	**274,037,400 Pounds**
4. Upcycling	Ocean-bound plastic in pounds	Not Available	Not Available	Not Available	**>1.7 million pounds**
	Plastic bottles ocean bound in unit count	Not Available	Not Available	Not Available	**5 Billion plastic bottles**
	Clothing hangers upcycled in units	Not Available	Not Available	Not Available	**127 M units**
5. Corporate environmental awards and rankings	CDP	**No**	**No**	**No**	**Yes: Triple "A" Ranking**
	Dow Jones Sustainability Index	**No**	**No**	**No**	**Yes: Industry Leader List**
	FTSE4Good Index	**No**	**No**	**No**	**Yes: Listed since 2003**
	EcoVadis Gold Corporate Social Responsibility	**No**	**Yes: Gold- Top 5% 2018**	**Yes: Gold- Top 2% 2019**	**Yes: Gold-Top 1% 2003-2020**

	KnowTheChain (X/100 and ranking)	No	Yes: <50/100 (29th rank)	No	Yes: 72/100 (2nd rank)
	CR 100 Best Corporate Citizens	No	No	No	Yes: #5 out of 100
	World's Most Ethical Companies for 2019	No	No	No	Yes: Listed
	Gartner's Supply Chain Top 25 List	No	No	No	Yes: #7 out of 25
	Corporate Knights 2020 Global Most Sustainable Corporations in the World	No	No	No	Yes: 58/100
	Diversity Journal – Profile/2020 Annual Diversity Leader Award	No	No	No	Yes: Listed

*Epson latest reported year of tonnes is 2019.

Appendix 1: Links to Keypoint Intelligence and Printer OEM Sustainability Resources

Keypoint Intelligence

keypointintelligence.com/HPPlanetPartners

HP

HP Sustainable Impact program: http://www.hp.com/SustainableImpact

HP 2020 Sustainable Impact Report: https://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c07539064

HP 2019 Sustainable Impact Report: https://h20195.www2.hp.com/v2/GetDocument._aspx?docname=c06601778

HP Planet Partners product return and recycling: www.hp.com/Recycle

HP Sustainable Impact Awards: http://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c06009298

Original HP Ink and Toner Cartridges: hp.com/supplies

HP Expands Efforts to Reduce Ocean Bound Plastics: https://press.hp.com/us/en/press-releases/2019/hp-expands-efforts-to-reduce-ocean-bound-plastics-.html

HP Toner Cartridge Use of Recycled Content: https://h20195.www2.hp.com/v2/GetPDF.aspx/4aa5-4602enw.pdf

HP Ink Cartridge Use of Recycled Content: https://h20195.www2.hp.com/v2/GetPDF.aspx/4AA6-4523ENW.pdf

Canon

Canon Sustainability Report: https://global.canon/en/csr/report/pdf/canon-sus-2021-e.pdf

Canon Environment and Sustainability Initiatives: https://www.usa.canon.com/internet/portal/us/home/_about/environment-sustainability-initiatives

Canon Recycling Programs: https://www.usa.canon.com/internet/portal/us/home/about/environment-_sustainability-initiatives/

Canon Ink and Toner Finder: https://shop.usa.canon.com/shop/en/catalog/ink-paper-toner

Start date of Canon Recycling program: https://global.canon/en/csr/report/pdf/canon-sus-2018-e.pdf

Epson

Epson Social Responsibility: https://global.epson.com/SR/

Epson Recycling Program: https://epson.com/recycle-program

Epson Ink Finder: https://epson.com/InkFinder

Epson 2020 Sustainability Report:
https://global.epson.com/SR/report/2020/pdf/epson_sr2020_all_e.pdf

Brother

Brother Corporate Social Report: https://global.brother/en/csr

Brother: https://www.brother.ee/about-brother/brother-earth

Brother Supplies: https://www.brother-usa.com/supplies

Brother 2020 Sustainability Report:
https://download.brother.com/pub/com/en/csr/pdf/eco-2020-all.pdf

About Keypoint Intelligence

For 60 years, clients in the digital imaging industry have relied on Keypoint Intelligence for independent hands-on testing, lab data, and extensive market research to drive their product and sales success. Keypoint Intelligence has been recognized as the industry's most trusted resource for unbiased information, analysis, and awards due to decades of analyst experience. Customers have harnessed this mission-critical knowledge for strategic decision-making, daily sales enablement, and operational excellence to improve business goals and increase bottom lines. With a central focus on clients, Keypoint Intelligence continues to evolve as the industry changes by expanding offerings and updating methods, while intimately understanding and serving manufacturers', channels', and their customers' transformation in the digital printing and imaging sector.

For more information on Keypoint Intelligence, please call (973) 797-2100, visit www.keypointintelligence.com, or email info@keypointintelligence.com.