Sustainable Impact strategy

Sustainable Impact is at the heart of HP's business strategy, and we aim to be the world's most sustainable and just technology company. In 2021, HP announced our most comprehensive and ambitious Sustainable Impact agenda yet. It connects us to the most defining and urgent issues of our time, where we can have the greatest impact.

- **Climate Action:** Drive toward a net zero carbon, fully regenerative economy while engineering the industry's most sustainable portfolio of products and solutions.
- **Human Rights:** Create a powerful culture of diversity, equity, and inclusion. Advance human rights, social justice, and racial and gender equality across our ecosystem, raising the bar for all.
- **Digital Equity:** Lead in activating and innovating holistic solutions that break down the digital divide that prevents many from accessing the education, jobs, and healthcare needed to thrive. Drive digital inclusion to transform lives and communities.

Our strategy is rooted in science and is informed by HP's ESG materiality assessment, the United Nations Sustainable Development Goals and other external frameworks, ongoing engagement with stakeholders, and alignment with our core businesses. It prioritizes efforts where HP's technology, talent, and platform can do the most good. Above all, our strategy supports a culture shift that fully integrates Sustainable Impact and purpose throughout every aspect of our business and ecosystem.

We know we must stand for more than the products we sell, which is why Sustainable Impact is both a business imperative and a key differentiator for HP. In 2021, Sustainable Impact helped HP win more than US$3.5 billion in new sales.[1]

Businesses that can decouple growth from consumption and greenhouse gas (GHG) emissions, grow through an inclusive culture, and offer solutions to some of our greatest collective challenges will thrive in the long term. Through our focus on Sustainable Impact, we capitalize on what we do best while anticipating and preparing for the next wave of global challenges. We focus on doing the right thing, even when it is difficult, to deliver lasting value through the power of our technology.

Our key focus areas

In 2021, we issued HP's inaugural Sustainability Bond for US$1 billion, to help finance HP projects that contribute to a more sustainable and just future. See the HP Inc. Sustainability Bond progress statement.

The HP Amplify Impact™ program aligns with our Sustainable Impact strategy by seeking to educate, excite, and empower HP channel partners to create lasting positive change and maximize sustainable business opportunities. During 2021, more than 1,400 HP partners pledged to enroll in the program. In February 2022, we expanded HP Amplify Impact™ to over 40 countries, as we drive toward our objective of enrolling at least 50% of our more than 10,000 partners by 2025. As of April 2022, Amplify Impact partners had completed more than 10,000 sustainability training courses.

Climate Action

Our mission

Drive toward a net zero carbon, fully regenerative economy while engineering the industry's most sustainable portfolio of products and solutions.

How we're driving progress

The science is clear, and the time to act is now. The 2021 Intergovernmental Panel on Climate Change report, Climate Change 2021: The Physical Science Basis, demonstrates that making dramatic progress this decade is critical. As UN Secretary-General António Guterres noted, the publication is a "code red for humanity."

In April 2021, we announced our ambitious climate agenda, and set new goals across our value chain to combat climate change, focused on GHG emissions, circularity, and forests. We use science-based targets to drive progress across our business, consistent with emission levels required to limit global warming to 1.5°C. HP's five climate action strategic drivers—print and compute as a service, sustainable materials, supply chain decarbonization, energy efficiency, and forest investments—are intended to decouple growth from GHG emissions and resource consumption, drive innovation, and transform our design and business models.

By shifting toward circular design principles, we are working to increase value for customers while reducing environmental impacts across the value chain. During 2021, we used a total of 32,000 tonnes of postconsumer recycled content plastic in HP products—equivalent to 13% of overall plastic use.

To decarbonize our supply chain, we continue to increase engagement with HP suppliers. We provide support to help them set and meet their own goals, including science-based targets. Participants in our programs avoided 81,000 tonnes of CO_2e emissions[2] and saved 31 million kWh (US$3.9 million) in 2021.

Since 2016, HP brand paper has been derived from recycled or certified sources, and since 2020 this has also been the case for paper-based packaging for home and office printers and supplies, PCs, and displays.[3] We are now working to expand beyond our own value chain and counteract deforestation for the fiber of non-HP paper used in HP printing products and services through the HP Sustainable Forests Collaborative. In 2021, we pledged US$80 million to support the World Wildlife Fund (WWF) to help address potential impacts on forests from paper used in printing with HP printers by 2030.

To drive systemic change, we engage in advocacy, advancing policies that support collective progress. To extend our influence, we join with leading companies in emissions-reduction efforts, policy engagement, and goal setting, including through the Clean Energy Buyers Association, RE100, Ceres, CDP Supply Chain, and WWF's Climate Business Network.

Sustainable Impact goals

Goal	Progress in 2021	SDGs
Carbon emissions		
Reduce HP value chain GHG emissions by 50% by 2030 (compared to 2019), and achieve net zero emissions by 2040[4]	HP's carbon footprint of 28,459,500 tonnes of CO_2e in 2021 was 9% less than in 2019, primarily due to reductions related to product use resulting from increased energy efficiency and changes to the mix of products sold. Learn more.	13
Reduce Scope 1 and Scope 2 GHG emissions from global operations by 60% by 2025, compared to 2015[5]	HP's global operations produced 159,500 tonnes of Scope 1 and Scope 2 CO_2e emissions, 59% less than our 2015 baseline. Learn more.	13
Use 100% renewable electricity in our operations by 2025	HP's global operations procured and generated 264,054 MWh of renewable electricity and attributes, equivalent to 54% of our global electricity consumption. Learn more.	7, 13
Reduce HP product-use GHG emissions intensity by 30% by 2025, compared to 2015[6]	HP has achieved this goal for the second year in a row, with a 39% decrease through 2021, compared to 2015 (therefore, we will not report on this goal moving forward). Learn more.	12, 13
Circularity		
Reach 75% circularity for products and packaging, by 2030[7]	39% circular by weight.[8] Learn more.	12
Recycle 1.2 million tonnes of hardware and supplies by 2025, since the beginning of 2016	Recycled 764,800 tonnes. Learn more.	12
Use 30% postconsumer recycled content plastic across HP's personal systems and print product portfolio by 2025[9]	13% achieved. Learn more.	12, 14
Eliminate 75% of single-use plastic packaging by 2025, compared to 2018[10]	44% reduction, from an average of 221 grams/unit in 2018 to 124 grams/unit in 2021. Learn more.	12, 14
Reach zero waste in HP operations by 2025[11]	In 2021, we achieved an 86.4% landfill diversion rate globally. Learn more.	12
Forests		
Counteract deforestation for non-HP paper used in our products and print services by 2030.[12] Continue to source only sustainable fiber for all HP brand paper and paper-based packaging for home and office printers and supplies, PCs, and displays.[13]	During the year, we addressed 23% of our total fiber footprint for paper used in our products and print services. Our programs counteracted deforestation for non-HP paper representing 19% of this footprint.[14] Since 2020, all HP brand paper and paper-based packaging for home and office printers and supplies, PCs, and displays have been derived from recycled or certified sources.[15] During 2021, these equaled 4% of this footprint. Learn more.	13, 15
Water		
Reduce potable water withdrawal in global operations by 35% by 2025, compared to 2015, focusing on high-risk sites	HP withdrew 2,245,000 cubic meters of potable water across global operations in 2021, 30% less than in 2015, and focused reduction efforts on high-risk sites. Learn more.	6, 12

Carbon and climate impact

The manufacturing, delivery, and use of HP products and solutions requires a substantial amount of natural resources and energy use. Our carbon and water footprints cover our entire global value chain, from suppliers[1] to our operations and millions of customers worldwide. We were the first global IT company to publish a full carbon footprint, and one of the first to disclose a complete water footprint. We continue to measure and manage our environmental footprint across the value chain, always pursuing areas for improvement.

Transforming HP to help drive a more efficient, circular, and net zero carbon economy is central to our Sustainable Impact strategy.

HP has achieved triple "A" scores for transparency and action on climate, forests, and water for several consecutive years, and has also been recognized as a CDP Supplier Engagement Leader. See Recognition.

We strive to reduce the climate impact of our supply chain, operations, and products and solutions. HP's carbon footprint in 2021 equaled 28,459,500 tonnes of carbon dioxide equivalent (CO_2e), 3% less than in 2020. An 11% decrease in GHG emissions associated with product use more than offset a 3% increase related to product manufacturing and a 13% rise related to product transportation. This reduction was driven in part by the increased energy efficiency of our products as well as the continued impact of COVID-19 on sales of different product lines, particularly a shift toward Chromebooks, other notebooks, and inkjet printers, which tend to be lighter and are more energy efficient than desktop PCs and LaserJet printers.

While GHG emissions from our operations only represent 1% of our footprint, we work to demonstrate leadership in emissions management, reduction, and disclosure. Our global operations produced 159,500 tonnes of Scope 1 and Scope 2 CO_2e emissions during 2021, a 7% decrease compared to 2020.

2030 AND 2040 GOALS

Reduce HP value chain GHG emissions by 50% by 2030 (compared to 2019), and achieve net zero emissions by 2040[1]

PROGRESS IN 2021

HP's carbon footprint of 28,459,500 tonnes of CO_2e in 2021 was

9%

less than in 2019, primarily due to reductions related to product use resulting from increased energy efficiency and changes to the mix of products sold.

See additional GHG emissions-reduction goals.

METHODOLOGICAL UPDATES

This report reflects several methodological updates to improve the accuracy of our carbon footprint calculations and to align with our 2030 GHG emissions-reduction goal. These include:

- Personal systems: Using a new life cycle assessment (LCA) tool, which allows for updated and refined modeling based on HP-specific parameters, to calculate GHG emissions associated with personal systems.
- Paper: Using the tonnage of HP brand paper sold during the year to calculate associated GHG emissions, and not including GHG emissions associated with non-HP brand paper used in HP printers. These emissions are now included in Scope 3 category 1 instead of category 11. This aligns with guidance regarding indirect use-phase GHG emissions associated with product use from the GHG Protocol and the Science Based Targets initiative (SBTi).
- Nonproduction suppliers: Adding GHG emissions associated with nonproduction suppliers, based on data provided by those suppliers. Learn more.

Based on our updated methodology, we have restated GHG emissions data for 2019 and 2020, for comparability. These methodological updates impact Scope 3 categories 1, 4, 9, 11, and 12.

HP carbon footprint, 2021

28,459,500 tonnes CO_2e

*Segments do not add up to total due to rounding.

**Includes HP brand printer and copier paper sold, which represented 0.5% of our carbon footprint.

***This value is zero due to rounding.

See also:

- Description of our methodology in the HP Carbon accounting manual.
- Full list of our GHG emissions-reduction goals and progress.
- Full carbon footprint data for 2019–2021.
- GHG emissions-reduction initiatives across our business: Supply chain, Our facilities, and Products and solutions.
- Task Force on Climate-Related Financial Disclosures index (includes links to detailed disclosures throughout this report, the HP 2022 Proxy Statement, and our CDP submissions).
- HP CDP Climate Change response.

See data table for specific Scope 1, 2, and 3 category GHG emissions reporting.

Water

Many parts of the world grapple with the availability and quality of water, and HP calculates, discloses, and works to reduce water use across our global value chain.

In 2021, our water footprint equalled 146,756,000 cubic meters,[1] 8% less than in 2020. This resulted primarily from a reduction in indirect water consumption from electricity generation associated with HP product use, which more than offset water consumption in HP's supply chain.

Although water withdrawal in operations only represents 2% of our footprint, we have direct control over those activities. We work to minimize water withdrawal within our facilities and demonstrate strong practice for others in the industry and beyond.

See also:

- Description of our methodology in the HP Water accounting manual.
- Full water footprint data for 2019–2021.
- Water-use reduction initiatives across our business: Supply chain, Our facilities, and Products and solutions.
- HP CDP Water Security response.

calendar year 2022, up ten-fold from 2020. We achieved 4.5% in 2021.

In 2021, HP announced an expanded early payment program in partnership with C2FO, which provides broad access to funding for the company's diverse suppliers. Studies from the Federal Reserve and others have found that diverse businesses face greater difficulty in accessing credit, creating short-term cash flow challenges. We are working to bridge this gap by offering inexpensive access to capital for diverse partners that have been denied equal access historically.

Supplier expectations

We ask that our suppliers partner with HP by prioritizing diversity, equity, and inclusion within their own operations. To improve the diversity of our suppliers' workforces, we require top service suppliers in the United States with account teams of 10 or more to implement diversity initiatives to recruit, attract, and hire diverse employees, with a goal that at least 10% of HP supplier account team members be Black/African American by the end of calendar year 2022. We also have targeted programs in the United States with marketing and legal suppliers and partners.

To advance progress deeper in our supply chain, we have added a clause in new and renewed contracts for suppliers that provide services to HP in the United States, setting the expectation that they should spend a minimum of 10% of any work subcontracted and/or purchased on behalf of HP with diverse businesses. To strengthen the program's racial equality focus, top suppliers subcontracting work in the United States must spend at least 5% with certified Black/African American businesses. In 2021, our allocatable indirect spend[2] with diverse suppliers through this program was more than US$350 million.

Supporting diversity in the financial sector

HP's Bank Model—the tool by which HP ranks and prioritizes potential bank partners—incorporates an annual diversity survey that looks at bank diversity overall as well as the diversity of teams that service HP.

In 2021, HP issued its inaugural Sustainability Bond by partnering with Black/African American-, Latino-, women-, veteran-, and disabled veteran-owned banks, which have received approximately 5% of total underwriting fees. We engaged a Black/African American- and women-owned firm to execute the more than 10% of share repurchases carried out during 2021, and have continued working with a minority-owned firm as one of a small group of commercial paper (short-term borrowing) dealers.

Environmental impact

Our production and nonproduction suppliers are essential partners as we work to drive net zero carbon and improved resource efficiency throughout the value chain. For more than a decade, we have worked closely with our suppliers to improve their environmental programs and report progress transparently. Our Supplier Responsibility Scorecards are central to our efforts to set expectations, evaluate performance, and drive ongoing improvement.

We request 98% of our production suppliers, by spend, as well as strategic nonproduction suppliers, to disclose key qualitative and quantitative information about environmental management and impacts through HP's CDP Supply Chain membership. Requested information includes GHG emissions and goals, total and renewable energy use, water withdrawal, climate and water risks, and governance.

We periodically raise our expectations relating to supplier environmental management criteria, such as science-based GHG emissions-reduction targets, third-party verification of GHG emissions, publication of a GRI-based sustainability report,

HP CUSTOMER SUPPORT SUPPLIER PLEDGE

HP is continually expanding the scope of our supply chain responsibility program, integrating it deeper and more broadly throughout our supplier base. In 2021, we launched the Customer Support (CS) Supplier Pledge to boost sustainability standards among the nearly 700 suppliers that HP CS engages with.

Developed to support progress toward our 2030 climate and circular economy goals, the Pledge includes several existing components of our supplier program:

- Submitting environmental transparency reporting to CDP Climate Change annually
- Setting science-based GHG emissions reduction targets, including at least a 50% reduction in absolute Scope 1 and 2 emissions by 2030
- Training employees on the HP RBA Supplier Code of Conduct

The Pledge also sets additional supplier expectations, such as:

- Applying circular economy principles throughout their business, including by using programs such as HP Planet Partners and HP Device Recovery Service
- Developing and sharing ambitions that align with HP's diversity, equity, and inclusion goals

We aim to enrol our 50 largest CS-related suppliers.

and transparent reporting of key environmental information through CDP.

We continue to deepen engagement with suppliers representing GHG emissions "hot spots" in our supply chain—such as LCD panels, printed circuit board assemblies, and memory and storage—identified through life cycle assessments (LCAs) and directly collected data. In 2021, this included procurement-driven workshops with 27 suppliers, representing about 60% of HP's production spend. Focus areas included setting science-based targets and establishing roadmaps for increasing renewable energy use.

To understand and manage our impacts, we calculate supply chain GHG emissions and water withdrawal in two ways:

- In this section of the report, we include data reported by our first-tier production suppliers, product transportation suppliers, and nonproduction suppliers. This data reflects the volume of HP's business with each organization. Through engagement with suppliers, we can better understand and influence improvements in performance year over year.
- The supply chain-related data included in our carbon and water footprints is derived from product LCA-based estimates. This analysis is intended to provide as complete an understanding as possible of impacts across the multiple levels of our supply chain, from materials extraction through manufacturing and product use, as well as retail and storage. These calculations use a combination of HP-specific and industry methods and data.

Greenhouse gas emissions

In 2008, HP was the first major IT company to publish aggregated supply chain GHG emissions data. We continue working to drive progress in this area, including through our goals (see right). Our goal to reduce supply chain GHG emissions intensity is one of HP's three value chain goals validated by the Science Based Targets initiative (SBTi). These goals were developed in collaboration with WWF experts, demonstrating our rigorous goal-setting process.

For the sixth consecutive year, HP was named by CDP as a Supplier Engagement Leader for our actions and strategies to reduce emissions and manage climate risks in our supply chain.

Although GHG emissions intensity decreased by 4% between 2015 and 2020 when calculated as a three-year rolling average, yearly GHG emissions intensity values (not calculated as a rolling average) decreased by 9% during that timeframe. To help reach our goal, we focus our suppliers' attention on improving energy management and efficiency, using renewable energy, and setting science-based targets.

Supplier GHG emissions performance

tonnes CO_2e

	2018	2019	2020	2021
Production supplier Scope 1 and Scope 2 emissions*	2,900,000	3,000,000	2,700,000	
Product transportation	1,300,000	1,250,000	1,510,000	1,620,000
Nonproduction supplier Scope 1 and Scope 2 emissions*	210,000	190,000	140,000	

* 2020 is the most recent year data is available.

2025 GOAL

Reduce first-tier production supplier and product transportation-related GHG emissions intensity by 10% by 2025, compared to 2015[1]

PROGRESS THROUGH 2020

GHG emissions intensity decreased

↓ 4%

through 2020, compared to 2015

2025 GOAL

Help suppliers cut 2 million tonnes of carbon dioxide equivalent (CO_2e) emissions between 2010 and 2025[2]

PROGRESS THROUGH 2020

Suppliers avoided

1.46 MILLION

TONNES

of CO_2e emissions[3]

Production suppliers

Approach

Through our Supplier Responsibility Scorecards, we set requirements for our production suppliers, including related to energy use and GHG emissions performance and disclosure. In 2021, we continued engaging with suppliers to drive positive change, for example by providing training outlining our environmental expectations.

We also worked with other organizations during 2021 to accelerate cross-sector improvements:

- HP collaborated with the We Mean Business Coalition, CDP, and industry peers to promote the uptake of SBTi methodology among IT supply chain companies (both production and nonproduction suppliers) based in the Greater China region.

- We joined the 2021 CDP Science-Based Targets Campaign and co-signed a letter to a large number of companies—including many in our supply chain—urging them to set SBTi-validated GHG emissions-reduction goals. By the end of 2021, nine of those suppliers had a new target in place, including four with a net zero commitment.
- To support local demand for renewable energy in countries where some of our suppliers are based, we worked with the U.S. Department of State through the Clean Energy Demand Initiative to produce letters of intent with those countries, which were presented at the COP26 conference.
- Along with seven of our suppliers, we participated in roundtable discussions hosted by WWF Climate Business Hub, with representatives from the Chinese government and renewable energy developers, to promote policies that will enable greater renewable electricity sourcing in Jiangsu Province.

Our Energy Efficiency Program in China and Southeast Asia, implemented in collaboration with NGOs such as BSR, Natural Resources Defense Council (NRDC), the World Resources Institute, and WWF, helps suppliers to build capabilities, identify ways to improve energy efficiency, and explore the use of renewable energy.

Since 2010, we estimate that participants in this and other programs have avoided 1.46 million tonnes of CO_2e emissions[4] and saved a cumulative 992 million kWh (US$119 million) of electricity, including 81,000 tonnes of CO_2e emissions and 31 million kWh (US$3.9 million) in 2021.

More broadly, through CDP, our production suppliers reported savings of 20 million tonnes of CO_2e and US$465 million from reduction initiatives implemented in 2020.[5] This demonstrates the scale of ongoing GHG emissions-reduction activities throughout our production supply chain, regardless of whether driven by HP's engagement.

HP uses 100% renewable electricity to power the final assembly of over 95% of our PC and display products worldwide[6]

Performance

In 2020, the most recent year for which data is available, the suppliers that make HP products generated 2.7 million tonnes of Scope 1 and Scope 2 CO_2e emissions attributable to HP, 8% less than in 2019.

This reflects the impact of supplier energy-conservation measures and GHG emissions-reduction projects, increased renewable energy use, and investment in power purchase agreements. Facility closures caused by COVID-19 also reduced emissions. The intensity of GHG emissions per HP annual revenue decreased in 2020 by 9% compared to 2015.

We engaged 98% of our first-tier production suppliers, by spend, to help reduce their environmental impact. Overall, 95% (by spend) reported having GHG emissions-reduction-related goals, and 31% reported science-based targets (13% validated by the SBTi and 18% evaluated by HP). We also encourage suppliers to use renewable energy. Seventy-seven percent reported doing so in 2021, by spend, with 71% reporting renewable energy use goals, up from 70% the prior year.

Product transportation

Approach

To improve efficiency, cut costs, and reduce negative environmental impacts, we work to optimize our logistics network by consolidating shipments, identifying new routes, and shipping directly to customers or local distribution centers. To drive progress, in 2021 we held GHG emissions-reduction workshops with about 20 suppliers representing more than 90% of our CO_2e emissions in this area. Sustainability topics are also discussed during our quarterly executive-level meetings with these same suppliers, to promote a focus on environmental topics and encourage them to set related performance goals.

HP is participating in several pilot programs to explore opportunities to reduce GHG emissions from logistics, for example Maersk's project with industry leaders to scale zero carbon solutions for ocean transport, such as the use of carbon neutral e-methanol or sustainable bio-methanol.

We require our product transportation suppliers to use the Global Logistics Emissions Council Framework to provide standardized calculations and data that account for variation in different locations. To drive progress across the industry and beyond, we are working with the Clean Cargo Working Group, the Smart Freight Centre, the International Council on Clean Transportation, and the U.S. Environmental Protection Agency (EPA) SmartWay program.

We continue to use SmartWay partners as a first choice for 100% of our products shipped by truck in the United States and Canada.[7] The program aims to help improve road transportation efficiency and reduce GHG and other emissions. In 2021, HP won the U.S. EPA SmartWay Excellence Award for the eighth year in a row, demonstrating leadership in freight supply chain energy and environmental performance for the "Large Shipper" category in the United States. During the year, we joined the Sustainable Freight Buyers Alliance to decarbonize freight and create demand for low and zero emissions across all modes of transport.

Reducing packaging size and weight also has the potential to decrease GHG emissions associated with product transportation. See Packaging innovation.

Performance

Product transportation resulted in 1.62 million tonnes of CO_2e emissions in 2021, up 7% from the prior year. This was due primarily to product volume increases as well as improved data for emissions related to road (including rail).

Nonproduction suppliers

Approach

We purchase a wide range of goods and services related to the operations of HP, such as staffing, business consulting, marketing, and travel. We prioritize collaboration with nonproduction suppliers based on geographical risk and industry, and provide training to help improve reporting and reduce GHG emissions.

Performance

In 2020, the most recent year for which data is available, our nonproduction suppliers reported 140,000 tonnes of Scope 1 and Scope 2 CO_2e emissions attributable to HP. See detail in Footprint. During that year, 56% of HP nonproduction strategic suppliers produced environmental reports.

Water

Approach

Many of our suppliers operate in regions where water stress is a growing threat. We work with production suppliers to improve water management in their operations, including through the Supplier Code of Conduct, which contains provisions on water management, pollution prevention and resource use reduction, and environmental permits and reporting.

To identify supplier sites located in water-stressed areas, we use water risk assessment tools such as the World Resources Institute's Aqueduct Water Risk Atlas tool. We also identify sites that manufacture relatively water-intense product types, and use this information to assess overall water stress risks and opportunities. We ask our suppliers to report water risk, use, and management information through the CDP Supply Chain program. This drives suppliers' awareness of water security issues and allows us to assess suppliers' current water management strategies in the context of local environments and communities.

Through the use of best practice frameworks, we also work with suppliers to improve water reporting and, when appropriate, to enhance water management practices.

To further drive improvements, we include water stewardship criteria in our Supplier Responsibility Scorecard. Suppliers are scored for transparently reporting quantitative water withdrawal as well as for having a public company-wide policy or governance structure for water at the board of director or top executive level.

Performance

In 2020, the most recent year for which data is available, production suppliers withdrew 36 million cubic meters of water associated with HP, 3% less than in 2019. We believe that stronger supplier water-accounting practices contributed to year-over-year variations in data. By the end of 2020, 94% of our suppliers, by spend, had set water management goals.

See HP's 2021 water footprint.

Waste

Approach

We work with production suppliers to encourage waste measurement and reporting, reduce waste volumes, and drive progress toward a circular economy. HP requests our suppliers report on waste using the RBA Environmental Survey.

Performance

During 2020, the most recent year for which data is available, our suppliers generated 126,000 tonnes of nonhazardous waste associated with HP, a 14% decrease from 2019. This was primarily due to reduced waste generation at a significant supplier through waste prevention, reuse, and recycling efforts. Suppliers generated 46,000 tonnes of hazardous waste associated with HP in 2020, down 13% compared to the prior year. This was due largely to significant reductions by three suppliers. By the end of 2020, 76% of our production suppliers, by spend, had set waste-related goals, up from 72% the prior year.

SUPPLY CHAIN TRANSPARENCY

Much of our production supplier base is in China, so we have a particular focus in that area. The Corporate Information Transparency Index, developed by the Institute of Public & Environmental Affairs (IPE) and NRDC, evaluates the environmental practices of global brands' supply chains in China. In 2021, HP ranked #7 among global IT companies and #31 overall, of more than 600 brands assessed. On the Supply Chain Climate Action Transparency Index, developed by IPE and CDP, HP ranked #15 of about 680 brands.

During 2021, we continued encouraging our suppliers to submit inventories of substances released through IPE's public pollutant release and transfer register system, and cross-checked supplier sites representing 95% of our spend against IPE's public database of environmental violations.

We also collaborated with first-tier manufacturing suppliers in China to determine whether sub-tier suppliers complied with local environmental laws. This review of 730 sub-tier suppliers identified 27 reported violations in 2021. Of these, 18 had been corrected as of November 2021, and we continue working with the relevant first-tier suppliers and IPE to address and resolve the remaining issues. Business with several sub-tier suppliers has been suspended due to unaddressed environmental violations.

Our facilities

At our 150 sites in 59 countries around the world, we are taking action to reduce our GHG emissions, energy and water withdrawal, and waste generation. While GHG emissions associated with HP's operations represent just 1% of our overall carbon footprint, this is the area where we have the greatest control and influence, and therefore the greatest ability to make immediate impact. During 2021, we reduced our Scope 1 and Scope 2 GHG emissions 7% compared to 2020. By modeling sustainable operations, we also demonstrate our values in action, and highlight industry-leading practices as an example to employees, customers, suppliers, visitors, and others.

Environmental, health, and safety management

HP owns and leases facilities around the world. Our EHS Policy (now also available in Chinese and Korean) and EHS management system (which apply to all HP employees and contractors and all operational sites) help us to manage our environmental impact, improve worker safety, verify progress toward our goals and adherence to internal standards, and document compliance with all applicable laws and regulations. We investigate all allegations that our facilities are failing to comply with applicable laws and take corrective action when needed.

Every year, we perform risk assessments at all of our chemical-intensive and manufacturing sites. In 2021, we conducted on-site audits wherever possible. Where the pandemic prevented in-person visits, we conducted remote audits or postponed them until 2022. Management reviews the findings of all audits, and any deficiencies are identified and action plans are developed.

When feasible, we pursue environmental management and green building certifications at HP-owned and leased facilities worldwide. As of the end of 2021, 22 facilities, including all HP manufacturing sites, were certified to International Organization for Standardization (ISO) 14001:2015 (the most recent version), with 17 as part of our global ISO 14001 certificate. Thirteen facilities, including 57% of HP manufacturing sites, were certified to ISO 45001: 2018 for occupational health and safety.

As of October 31, 2021:

- Fifteen sites globally had achieved Leadership in Energy and Environmental Design (LEED®) certifications for buildings, including 12 at the Gold or above level.[1]
- Three sites had achieved BREEAM certifications for building, including one at the Excellent level.[2]
- Two locations had achieved SITES certification for sustainable landscape.
- One site had achieved TRUE certification for waste diversion.

All new build-outs target the LEED v4 Gold Standard and/or a local equivalent (such as BREEAM). In support of these objectives, HP has developed the HP Green and Smart Construction Playbook for project managers, which provides guidance on key principles such as energy use, indoor air quality, water withdrawal, and waste recycling. We also factor environmental considerations into decisions to lease new sites, asking prospective landlords, through the HP Energy and Sustainability Survey, about features such as LEED certification, renewable energy, electric vehicle (EV) charging stations, and water efficiency.

Sites use our HP EcoChampions Playbook to support training and engagement on sustainable operations. The Playbook includes modules with step-by-step guidelines in areas such as energy and water efficiency and waste reduction.

To drive improvement in health and safety, our EHS management system aligns with the American National Standards Institute (ANSI) Z10 standard and the ISO 14001 standard. We hire and train safety professionals to implement procedures for reviewing new and ongoing workplace health and safety hazards, and incorporate newly identified hazards periodically into our EHS management system.

Supervisors are required to ensure that all HP work-related health and safety incidents are investigated and issues addressed. When an injury occurs, we identify the root cause and implement solutions to address it. Employees receive guidance to identify and report hazards, and channels exist for them to report hazards outside of their immediate control, for action by facility teams. We ensure our employees feel able to remove themselves from situations they believe are unsafe.

To continually develop our global EHS management system, we engage with and seek input from safety professionals, management teams, and partners across HP. All locations must proactively implement company-wide health and safety standards. These specify that any new equipment and chemicals, along with any changes to the work environment, are reviewed for safety and environmental issues, and any issues addressed accordingly.

ABOUT OUR OPERATIONAL DATA

All environmental data reported in this section refers to HP operations through October 31, 2021. At that time, we owned or leased 150 sites in 59 countries. From invoices and other documents, HP directly tracked data for 2021 representing 95% of total electricity use, 90% of total natural gas use, 92% of total water withdrawal, 90% of nonhazardous waste, and 100% of total hazardous waste.

All HP facilities have assigned technical EHS personnel, and our global EHS team provides guidance and oversight. Joint management worker health and safety committees exist in some locations, and we regularly discuss relevant policies, processes, and regulatory compliance with employees.

In 2021, more than 1,690 employees and agency contractors took part in 107 instructor-led courses, and over 42,000 web-based EHS training courses were completed. Our training includes information about general workplace issues, as well as targeted information for specific roles.

Promoting a culture of environmental responsibility

Our employees worldwide make a vital contribution to improving our environmental performance, and employee engagement initiatives enable HP's global workforce to directly support our Sustainable Impact goals and vision. For example, during 2021:

- October EcoChallenge with Ecochallenge.org: More than 1,000 HP employees from 85 teams and 44 countries took part in this three-week personal sustainability challenge, with four HP sites earning top-10 spots.
- Earth Month: More than 1,600 employees pledged to take climate action by reducing food waste, adopting a plant-rich diet, and using energy-efficient appliances. Employees attended a plant-rich diet webinar and cooking lesson, as well as a climate action webinar in collaboration with Project Drawdown.

Greenhouse gas emissions[3]

Most of our GHG emissions from operations are related to the energy used to power our facilities. To save money, drive progress toward our goals, and reduce our climate impacts, we:

- Aggressively reduce energy consumption through optimization and efficiency projects.
- Increase on-site generation of renewable power.
- Procure off-site renewable power, including renewable energy credits (RECs), utility supplier green power options, and power purchase agreements (PPAs).

Our global operations produced 159,500 tonnes of Scope 1 and Scope 2 CO_2e emissions during 2021. This 7% decrease compared to 2020 drives progress toward our goal of reaching carbon neutrality in HP operations by 2025.

GHG emissions intensity equaled 2.5 tonnes of CO_2e per million U.S. dollars of net revenue in 2021, a 17% reduction from 2020. HP operations consumed more energy in 2021 than in 2020 due to partial site re-occupancy and increased activity at manufacturing locations. However, we still achieved a 7% year-over-year reduction in absolute GHG emissions due to reduced fleet usage and increased purchases of renewable electricity and attributes. Prior to the partial site re-occupancy, we maintained our broadened temperature set points, reduced lighting schedules, and manually shut off equipment where it was not required. Later in the year, we also implemented multiple capital-funded energy-conservation projects. Learn more.

See our full carbon footprint for 2019–2021, HP Carbon accounting manual, and HP CDP Climate Change response.

2025 GOAL

Reduce Scope 1 and Scope 2 GHG emissions from global operations by 60% by 2025, compared to 2015[4]

PROGRESS IN 2021

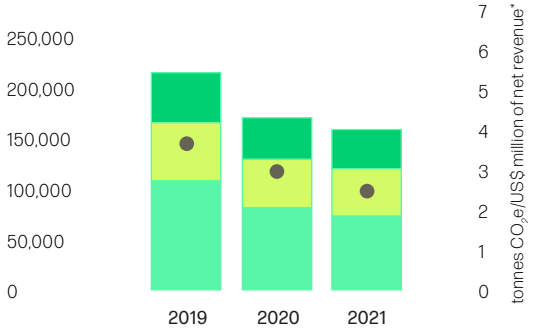
HP's global operations produced 159,500 tonnes of Scope 1 and Scope 2 CO_2e emissions

↓59%

less than our 2015 baseline

Scope 1 and Scope 2 GHG emissions from operations

tonnes CO_2e



* Historical emissions-intensity values were calculated using HP's annual revenue as characterized in financial reporting and Scope 1 and Scope 2 GHG emissions.

Energy efficiency

Energy use is a significant operating expense for HP and the main driver of our climate impact from operations. Our operations consumed 697,058 MWh of energy in 2021. Excluding energy from our transportation fleet (which HP did not report prior to 2021), energy use in operations increased by 3% compared with 2020, due to partial site re-occupancy and increased activity at our manufacturing sites. Global electricity use

increased by 2% during that period. Excluding energy use from our transportation fleet, energy intensity decreased 8% in 2021 compared with 2020.

Prior to the partial site re-occupancy, our non-critical buildings were closed due to COVID-19, and access restrictions prevented us from implementing capital-funded energy-conservation projects. During that closure, our facility teams ensured these buildings were set for unoccupancy by maintaining our broadened temperature set points, reducing our lighting schedules, and manually shutting off equipment when not needed.

Later in 2021, we implemented several capital-funded energy-conservation projects, which included chiller plant optimization, LED lighting upgrades, uninterruptible power supply (UPS) upgrades, air conditioning (HVAC) system replacements, site retro-commissioning, and installation of upgraded controllers for a large site compressed air system. We also confirmed that sites were compliant with the HP occupied temperature set points upon reoccupation.

Learn more about how we are reducing GHG emissions across our value chain in Supply chain responsibility: Environmental impact and Products and solutions.

Energy use from operations

MWh

	2019	2020	2021
Stationary combustion (natural gas and diesel)	132,315	119,387	126,484
Electricity*	526,835	482,119	492,712
Transportation fleet**			74,826
District cooling and heating (purchased)	4,224	3,395	3,036
Energy intensity (MWh/US$ million of net revenue)***	11.3	10.7	11.0

* Includes purchased electricity and electricity generated on-site.
** This data was first reported for 2021. Includes gasoline and diesel.
*** Historical energy-intensity values were calculated using HP's annual revenue as characterized in financial reporting and direct and indirect energy use.

2025 GOAL

Use 100% renewable electricity in our operations by 2025

PROGRESS IN 2021

HP's global operations procured and generated 264,054 MWh of renewable electricity and attributes, equivalent to

54%

of our global electricity consumption

Renewable energy

By 2025, we aim to use 100% renewable electricity to power our global operations. In 2021, we procured and generated 264,054 MWh of renewable electricity globally (83.4% wind, 5.0% solar, 9.5% hydro, and 2.1% unknown). Renewables accounted for 54% of our global electricity consumption, compared to 51% in 2020. Sources of renewable electricity in 2021 included RECs, GOs (guarantees of origin), and I-RECs (international RECs) (87.3%), direct purchases (11.2%), and renewable energy generated on-site and on-site PPAs (1.5%).[5] Through these purchases, we once again achieved our objective to use 100% renewable electricity in the United States and helped to advance the global market for renewables.

Building on previous renewable energy initiatives, such as the solar-covered roof at our Palo Alto headquarters, in 2021 we signed a large on-site solar PPA for our Barcelona, Spain, facility. This will provide approximately 2,174 MWh per year, equivalent to 12.2% of the site's annual electricity use. HP also signed an on-site solar PPA during 2021 to provide parking canopies at a site in Singapore.

#18 on the Green Power Partnership Top 30 Tech & Telecom list (as of April 2022)

Auto fleet, business travel, and commuting

Our goal is to reduce GHG emissions from HP-owned or leased auto fleet vehicles by 25% by 2025, compared to 2015. During 2021, our company fleet accounted for 20,100 tonnes of CO_2e emissions, down 16% compared to 2020 and 39% less than in 2015. By 2030, our goal is to achieve a 100% EV company fleet. We started our first EV fleet pilots in the Netherlands in October 2020 and Belgium in January 2021, and introduced a hybrid as our default fleet vehicle in the United States. By the end of 2021, 2% of our fleet was EVs and 12% was hybrid vehicles.

To decrease emissions associated with business travel, we provide employees with low-impact travel choices through collaboration with travel providers, planning tools, and transportation alternatives. In 2021, we joined the Eco-Skies Alliance program to support the use of sustainable aviation fuel.

We have committed to installing EV infrastructure at all feasible sites worldwide by 2030. In 2021, we offered EV infrastructure at 45% of 86 target sites, including 18 new charging stations installed during the year. Wherever feasible, we require new building constructions and leases to include EV infrastructure.

See data related to business travel and employee commuting.

Water

Water withdrawal associated with our operations makes up 2% of our total water footprint. This is roughly evenly split between direct withdrawal as described in this section (mainly for use in buildings, cooling, landscaping, and production of high-purity water for manufacturing) and indirect withdrawal associated with generation of the electricity we use in our facilities.

In 2021, we withdrew 2,556,000 cubic meters of water overall, 2% less than in 2020. This decrease was primarily due to the discovery and repair of a chronically leaking main pipe at our Barcelona, Spain, site in 2020. Water withdrawal intensity per million U.S. dollars of net revenue decreased by 12% between 2020 and 2021.

To decrease and recycle water used at our facilities, we employ capital practices, sustainable landscaping, infrastructure upgrades, leak monitoring and detection, and greywater reuse. At some locations, we also reduce our dependency on potable water by utilizing alternative sources, including rainwater and reclaimed water.

We use the World Resources Institute Aqueduct Water Risk Atlas tool to assess the risk of sites and prioritize reductions in water-stressed locations. Using this tool, we assessed 171 HP facilities as part of our risk modeling for 2021. Fifty of the facilities assessed (29% of the total) fall within the high-risk category for water stress. Those locations withdrew 245,000 cubic meters of water during 2021, 9% of our global total and down 17% from the prior year.

HP recycled or reused 310,000 cubic meters of water[6] globally during 2021 for landscaping, indoor plumbing fixtures, and as process water. This was equivalent to 11% of total water withdrawal. The company also captured and used 1,000 cubic meters of rainwater for cooling towers during the year.

2025 GOAL

Reduce potable water withdrawal in global operations by 35% by 2025, compared to 2015, focusing on high-risk sites

PROGRESS IN 2021

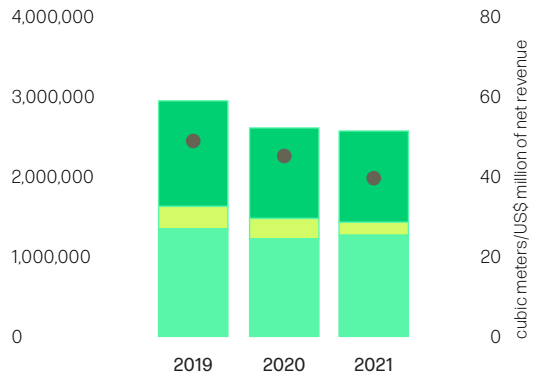
HP withdrew 2,245,000 cubic meters of potable water across global operations in 2021,

↓30%

less than in 2015, and focused reduction efforts on high-risk sites (see water-saving projects completed during 2021, at right)

Water withdrawal*

cubic meters



* Historical withdrawal-intensity values were calculated using HP's annual revenue as characterized in financial reporting and water withdrawal.

Water-saving projects completed during 2021 included:

- Barcelona, Spain, and Kiryat Gat and Caesarea, Israel: Identifying and remediating significant leaks at facilities, discovered due to our expansion of leak detection in 2020, saves approximately 63,000 cubic meters of water on an annualized basis.

Water withdrawal by source, 2021*

percentage of total

	2021
Municipal water	87.3%
Wastewater from another organization**	12.1%
Well water***	0.5%

* Direct use of surface water is insignificant and not included in data reported. Rainwater is about 0.03% of total.

** NEWater: ultra-purified wastewater used in manufacturing operations in Singapore.

*** This category includes groundwater.

- Singapore: Implementing a project at a facility to recycle water for use in cooling towers, reducing demand on treated water supplied by the municipality, saves about 64,800 cubic meters annually.

See detailed water data for 2019–2021, the HP Water accounting manual, and our CDP Water Security submission.

Wastewater

Wastewater is not a significant environmental risk at HP's operations. Our imaging and printing product manufacturing facilities generate process effluents that are pre-treated, strictly monitored, and discharged under government-issued permits. We implement procedures to prevent unauthorized discharges of chemicals to our facility wastewater systems and ensure that

these sites do not discharge untreated wastewater directly to surface water or to groundwater.

Waste

Although our facilities do not generate large amounts of waste, we employ a global policy of "reduce, reuse, and recycle" that supports our company-wide shift toward a circular economy. HP generated 13,900 tonnes of nonhazardous waste in 2021,[7] as well as 500 tonnes of used electronic equipment recovered from HP operations.

In 2021, we achieved an 86.4% landfill diversion rate globally, and we use disposal only as a last resort. The COVID-19 pandemic has adversely impacted waste management processes, which lowered our global diversion rate from 91.8% in 2019. We reuse electronic equipment when possible or recycle it responsibly through the same programs we offer customers. See Product repair, reuse, and recycling.

In 2021, to help us achieve site-specific Zero Waste certification, we began conducting in-depth audits of our waste streams, beginning with sites with the largest waste volumes. Following audits, HP teams at our Corvallis, Oregon, and Kiryat Gat, Israel, sites have begun implementing recommendations—such as expanding composting, eliminating disposables such as cups and utensils, and improving waste sorting—that are expected to reduce waste to landfill by 182 tonnes annually.

2025 GOAL

Reach zero waste in HP operations by 2025[8]

PROGRESS IN 2021

In 2021, we achieved an

86.4%

landfill diversion rate globally

The main hazardous waste we generate is liquid from ink-manufacturing facilities. These manufacturing sites prioritize waste management options with low environmental impacts and only use disposal as a last resort. Although ink manufacturing is a source of hazardous waste, Original HP Ink Cartridges used by customers and in our offices can be recycled and are considered nonhazardous in many of our major markets. We generated 7,060 tonnes of hazardous waste in 2021.

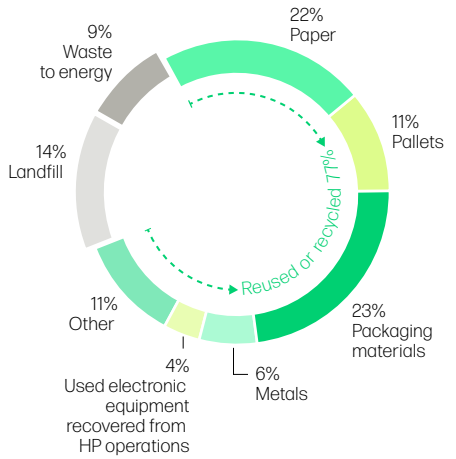
See detailed waste data for 2019–2021.

See HP's latest disclosure to the U.S. Environmental Protection Agency Toxics Release Inventory.

HP is conducting environmental investigations and/or remediation at several current or former operating sites. Some historic manufacturing activities of HP and predecessor companies used chemicals now known to have contaminated soil and groundwater. We are also involved in the cleanup of sites affected by the improper disposal and recycling of HP's waste by third parties. HP proactively works to implement a variety of remediation activities in cooperation with regulatory agencies.

Composition of nonhazardous waste and used electronic equipment recovered from HP operations, 2021*

percentage of total



* HP sites report nonhazardous waste volumes and disposition based on information provided by our waste disposal vendors. For sites unable to directly track nonhazardous waste, we estimate volumes and disposition using intensity factors based on similar operations.

Circular and net zero carbon economy

Through innovative products and services, we are providing our customers an increasingly circular experience. Our vision is to become a fully circular company powered by service models and circular design in our products, which will affect every part of our business. To minimize environmental impacts, we are working toward product circularity, continued improvements in energy efficiency, using more sustainable materials, and making substantial investments in forests. We extend product life through design, maintenance, upgrades, repair, and innovative service-based business models. At end of service, we strive to reuse or recover all products. Supporting these efforts, we aspire to using 100% renewable energy and producing zero waste to landfill across our manufacturing process.

We will continue to innovate throughout our product and services portfolio and work with suppliers and channel partners to increase circularity.

2030 GOAL

Reach

75%

circularity for products and packaging by 2030[1]

PROGRESS IN 2021

39%

circular by weight[2] (this equals the sum of the five metrics below)

32,000 TONNES

of recycled content plastic used in HP products and packaging (3.3% of total materials use)[3]

105,700 TONNES

of recycled fiber in HP brand paper and packaging (11.1% of total materials use)

227,800 TONNES

of certified sustainably managed fiber in HP brand paper and packaging (23.8% of total materials use)

4,300 TONNES

of recycled content metal used in HP products (0.4% of total materials use)

7,200 TONNES

of reused products and parts (0.8% of total materials use)

We apply rigorous circular design principles to drive progress toward a circular and net zero carbon economy through our portfolio of personal systems, home and office printing solutions, large format printing, industrial graphics, and 3D printing products and solutions. Far-reaching goals related to product circularity (see below), counteracting deforestation, and GHG emissions reduction underpin these efforts.

See the HP Circularity accounting manual.

Four key strategies (see graphic) guide our efforts to transform business models and decouple business growth from resource consumption. By focusing on these areas, we strive to continue to shrink our environmental footprint, support our customers to meet their own sustainability goals, and realize long-term sustainable impact.

Design for Circularity

Design plays a critical role in determining a product's environmental impacts. We apply rigorous design principles to improve the environmental performance of our products across their life cycle. In 1992, we developed our Design for the Environment program to formally consider factors impacting sustainability performance throughout the product design and development phases. We currently call this program Design for Circularity, to reflect how we are designing products and business processes for a circular economy.

We use a science-based approach to evaluate our products, identify and prioritize improvement opportunities, and set goals.

Product circularity

Keeping products and materials in use for longer, designing out waste, expanding repair, reuse, and recycling, increasing longevity, and implementing circular business models.

Energy efficiency

Improving product energy efficiency to reduce customers' energy consumption and decrease product use carbon and water footprints.

Sustainable materials

Increasing materials efficiency, practicing responsible chemistry, using more recycled content and renewable materials, and tackling ocean plastics.

Forest positive

Responsibly sourcing paper and packaging, restoring, protecting, and responsibly managing forests, and inspiring industry action.

Supporting HP's efforts to become a more circular business, we carried out our second performance assessment using the Ellen MacArthur Foundation (EMF) Circulytics tool in early 2022. Developed by the EMF to accelerate the transition to the circular economy, it is a comprehensive circularity measurement system for companies.

The assessment includes data across dozens of metrics, including a company's products, material flows, energy, water, infrastructure, and leadership. During the assessment, we documented incremental improvements to HP's scores for both Enablers (which support future progress) and Outcomes (which relate to current performance).

We also participated in panel discussions in late 2021 and early 2022 to provide feedback on the tool, suggesting refinements to the process and offering guidance and support to other organizations considering adopting Circulytics.

Among our main design priorities, we work to increase the use of recycled and renewable materials; practice responsible chemistry; enhance product repairability, reusability, longevity, and recyclability; continually improve product energy efficiency; and build in accessibility features. Our program has continually evolved in response to technological and scientific developments, changes to our supply chain, and customer demand.

Product design and development operations for our personal computing products, LaserJet Enterprise Solutions, and InkJet Printing Solutions are International Organization for Standardization (ISO) 14001 certified. We conduct internal compliance audits and benchmark against industry best practices on an ongoing basis.

Relevant products obtain a range of external certifications (see Product certifications and other information).

The analog-to-digital shift

HP industrial graphics and 3D printing technologies are driving an analog-to-digital shift by enabling cost-efficient short runs that reduce inventory and waste and enable companies to engage with customers in new and exciting ways, including through customized and quicker-to-market products. See HP's Digital Manufacturing Trends Report.

Across our portfolio, we offer solutions that apply digital technology to improve traditionally analog processes. For example, in the podiatry industry, clinics are able to replace highly variable, manual processes to create custom orthoses with accurate, repeatable, and consistent digital workflows and 3D printing. See Healthcare. HP also works closely with customers across product design, architecture, engineering, training, healthcare, and location-based entertainment to apply virtual reality (VR) technology to activities such as product development, employee training, walk-through simulation, and immersive experiences. Augmented reality and VR in employee training can replace classroom-style learning or be used to train for specific manual tasks, and is a focus area for HP's Innovation Garage and Campus of the Future initiatives. See Education.

In 2021, HP joined the International Green Book Supply Chain Alliance to support more sustainable practices within the publishing industry, particularly efforts to eliminate waste and reduce environmental impact.

HP won seven Green Good Design Awards for personal systems products in 2021. Our winning products included:

- HP Elite Folio
- HP Spectre x360 14
- HP ProBook 635 Aero G7
- HP Renew Sleeve
- HP U27 4K Wireless Monitor
- HP EliteOne 800 G6 All-in-One
- HP Elite c1030 Chromebook

Life cycle assessment

HP uses LCAs and product carbon footprinting (PCF)[4] to quantify the environmental impacts of our products, analyze possible alternatives, and target product performance improvements that deliver value to our customers and our business. We have conducted LCAs and PCFs of hundreds of products over the last several years, spanning our product portfolio. As we develop and expand our service-based models (which we refer to as circular business solutions), we will continue to study and quantify the potential they have to reduce environmental impacts and drive progress toward a more circular and net zero carbon economy. In 2021, we:

- Conducted or updated 15 LCAs of HP desktop, DesignJet, scanners, and enterprise printers.
- Completed 373 PCFs of new business HP desktops, notebooks, tablets, workstations, thin clients, All-in-One computers, and displays to better understand performance and inform ongoing design improvements.
- Completed an ISO-compliant, peer-reviewed LCA of the HP Z4 G4 Workstation, which found its most significant environmental impacts occurred during use. The circuit board and storage components were the most significant impact drivers during production, followed by mechanical components and the power supply.
- Evaluated the potential to decrease GHG emissions associated with molded fiber packaging tooling, by switching from metal

parts produced using milled aluminum to lighter parts produced with HP 3D printing, using castor oil-based PA11. The ISO 14067-compliant assessment demonstrated a possible reduction in carbon footprint of 60–78%.

- Completed three ISO-compliant, peer-reviewed LCA studies quantifying the environmental benefits of EvoCycle cartridges—a hybrid of reused, recycled, and original HP parts—compared with standard Original HP Toner Cartridges, remanufactured cartridges, and new build alternatives sold in France.
- Completed a cradle-to-grave comparative LCA of flexible packaging production using HP Indigo digital pouch factory and analog technologies. The LCA model was reviewed by a third party and then developed into an online LCA calculation tool for HP Indigo's 25,000 customers in the flexible packaging market.

HP's environmental impact calculations are done in accordance with ISO 14040 and ISO 14044. All impact estimates involve some level of reasonable assumptions and uncertainty, resulting largely from industry-wide data limitations and data quality. To mitigate this uncertainty, we have developed HP-specific tools that use a combination of HP process and product data, as well as high-quality LCA data. We strive to provide the most accurate environmental impact data, but some level of uncertainty will remain, and results should be considered accordingly.

Product certifications and other information

Product certifications help drive performance across the industry by providing comprehensive information that enables customers to make more sustainable product choices. In 2021, HP tracked over US$7 billion in new sales in which it met customer requirements for registered product eco labels.[5]

We share extensive product safety and environmental information online and contribute to the development of new standards.

Twenty-seven HP displays were recognized as Most Efficient by ENERGY STAR® in 2021.[6] In all, HP has 658 ENERGY STAR qualified personal systems and printing products—more than any other manufacturer.[7]

Large format printing

The newest water-based HP Latex Ink qualifies for a range of certifications for health and environmental performance. For example, this HP Latex Ink is certified to UL ECOLOGO®, and HP was the first printing manufacturer with UL ECOLOGO-certified ink. HP Latex Ink has also achieved GREENGUARD Gold certification for meeting some of the world's most rigorous standards for low chemical emissions in indoor air for the finished print. In addition, our water-based HP PageWide pigmented inks have attained UL ECOLOGO certification and the Nordic Swan Ecolabel.

See also:

- Eco labels

INVESTING IN R&D

HP focuses on creating transformative technologies that will disrupt industries and economies around the world. In 2021, HP spent over US$1.9 billion on ongoing product development and creating the transformative and disruptive technologies of the future. We invest in areas where we can make the greatest impact, and sustainability is integrated into our overall research agenda.

The majority of our R&D spending is focused on inventions and development for products that will be released in the next one to two years. The rest is dedicated to HP Labs and the business units for new business creation (including 3D Printing and Microfluidics) and for developing technologies that will mature over the following three to seven years.

Our research is yielding promising applications for more sustainable outcomes in industry, healthcare, education, and other fields. For example, we are developing 100% recyclable and biodegradable molded-fiber packaging solutions with our 3D printing technology: HP's Molded Fiber Advanced Tooling Solution enables the digital manufacture of light, durable tools that are quicker to produce, less labor-intensive to install, and more customizable than any comparable tool on the market.

As of October 31, 2021, HP's worldwide patent portfolio included over 28,000 patents.

- Eco Declarations: In 2021, HP provided Eco Declarations for product groups representing 93% of revenue
- HP Carbon Footprint Calculators
- HP product carbon footprint reports
- Product compliance declarations and certifications
- Safety data sheets

Eco labels across our personal systems and printers portfolio

% models, for products shipped in 2021*

Products	EPEAT identifies high-performance, environmentally preferable products				ENERGY STAR® recognizes products with superior energy efficiency	TCO recognizes various ergonomic and environmental features related to personal systems	Blue Angel recognizes criteria in product design, energy consumption, chemical emissions, noise, recyclable design, and take-back programs
	EPEAT (all)	EPEAT Gold registered	EPEAT Silver registered	EPEAT Bronze registered			
Personal systems	77%	29%	48%	0%	85%	40%	N/A
Printers	88%	14%	81%	6%	94%	N/A	67%

* EPEAT data for personal systems is for models registered worldwide, and for printers is for models registered in the United States. ENERGY STAR data for personal systems (version 8.0) is worldwide, and for printers (version 3.0) is for products sold in the United States. TCO data is for commercial desktops, notebooks, All-in-Ones, and displays shipped worldwide. Blue Angel applies only to products registered in Germany. All data is for models shipped any time during 2021.

Product circularity

We design our products to last, and make them easy to repair, so they can stay in use for as long as possible. Innovative service-based solutions, such as HP Device as a Service and HP Managed Print Services, reduce environmental impacts through extended life, device optimization, and easy take-back. When customers return end-of-service products, our repair, reuse, and recycling services help to incorporate products, components, and materials back into the next generation of circular products.

Durability, repairability, and reusability

HP products are often highly rated for durability and repairability. We offer services related to optimization, maintenance, and renewal that extend product life, capture more value from natural resources, and reduce environmental impact.

We provide free service documentation for most products, supplemented with service options and warranties, including through HP Care Pack Central. The HP Customer Self Repair web page provides information and the HP Parts Store sells PC and printer parts. HP Renew Services helps customers securely recover and repurpose or recycle end-of-use devices.

Personal systems

We test the quality and durability of our Pro and Elite notebooks, Pro and Elite desktops and All-in-Ones, and select workstations and mobile thin clients using the rigorous military MIL-STD-810G standard. See our technical white paper about testing the business ruggedness and reliability of HP Business PCs.

During 2021, the iFixit product repair site rated the HP EliteBook 840 Aero G8 9 out of 10.

Home and office printing solutions

Many of HP's home and office printers adhere to relevant eco label standards for extending product life and conserving materials, including EPEAT® specifications based on IEEE standard 1680.2, as well as Blue Angel environmental criteria. Through modular design, we increase upgradeability and enable many of our printers to be easily disassembled for repair or recycling. Spare parts are available until at least three years after a printer has ceased production.[8]

HP EVOCYCLE TONER CARTRIDGE

In December 2021, HP introduced in France[9] the HP EvoCycle Toner Cartridge, designed to help public sector and enterprise customers meet their sustainability requirements.[10] Incorporating reused and recycled components from Original HP Toner Cartridges returned within the region through HP Planet Partners, EvoCycle cartridges include 76% reused and recycled components (excluding toner and parts that directly impact print quality), or 45% by absolute weight.[11] This innovative process enables EvoCycle cartridges to have a lower production-phase carbon footprint than standard Original HP Toner Cartridges,[12] while supporting the circular economy by using less virgin plastic. Since cartridges are manufactured and supplied within France, the program also reduces the carbon footprint associated with product distribution and helps sustain local jobs.

Large format printing

HP's Splash-resistant Bond Paper offers customers improved splash resistance[13] on an economical paper with HP Bright Office Inks on HP DesignJet T-series printers. Our new Z-series Pro printers are all EPEAT® registered and ENERGY STAR® qualified, and are made of 20–30% recycled content plastic.

HP Latex Inks are designed to provide indoor and outdoor durability and versatility across common media types used in sign and display applications. Learn more.

Industrial graphics

HP digital presses are major capital investments for our customers, and are designed for upgradeability, repair, and refurbishment. Through firmware updates and component upgrades, HP Indigo presses used by customers are kept up to date. The HP Indigo Certified Pre-Owned program enables us to keep products in use for longer, reducing waste while allowing customers to access HP Indigo products at a lower price point. In 2021, we provided 100 pre-owned presses to customers through the program.

Due to continual upgrades of components and technologies such as printheads, electronics, software, and inks, customers who invested in a PageWide T200 press in 2010 can now experience more than twice the speed, with even greater print quality, color vision, media versatility, and HP Brilliant Ink. See our 2020 HP Sustainable Impact Report for more details about how we protect industrial graphics investments.

Print and compute as a service

HP's service-based solutions are designed to deliver increased value through reduced environmental impact and capital costs. Customers can access the latest technology while HP manages the fleet, and an ongoing relationship provides valuable insights on end user behavior and needs. Our service offerings include regular maintenance, which has the potential to keep hardware in use for longer and reduce waste. Decreasing individual product shipments and customer store visits also reduces the associated GHG emissions. At end of service, we recapture value from materials through a range of product repair, reuse, and recycling options.

Personal systems

Our expanding Device as a Service (DaaS) offering provides customers the latest HP technology while improving cost predictability and enabling a better employee experience. Business customers can upgrade their products to the most current and efficient models, with the purchasing and consumption model that works best for them.

HP Renew Services helps phase out end-of-use devices[14] securely and responsibly:

- **HP Device Recovery Service** buys used devices securely to give them new purpose, extend their lifespans, and reduce negative environmental impact. Watch our video for more details.
- **HP Sanitization Service:** Confidential data is securely erased according to the NIST 800-88 standard, or the storage media is destroyed, before removing or recycling customers' old devices. Customers receive a certificate of data sanitization if they purchase this service.
- **HP Recycling Service:** Devices are recycled securely. Customers receive a certificate of destruction if they use this service.

Home and office printing solutions

HP Managed Print Services (MPS) helps clients manage and optimize their printer fleets, digital workflows, and paper consumption by combining hardware, supplies, software, and consulting and management services. In late 2020, HP MPS was certified CarbonNeutral® in accordance with the CarbonNeutral Protocol,[15] and was the world's most comprehensive carbon neutral Managed Print Service offering.[16] In 2021, we extended CarbonNeutral product certification to HP Component MPS, which provides partners a mechanism to make their contractual obligations carbon neutral using the same stringent requirements and standards as HP MPS.

We work to reduce GHG emissions across the life cycle of our products, including by improving resource efficiency, promoting settings and user behaviors to reduce energy consumption and paper use, and driving responsible end-of-life activities. For any remaining GHG emissions, we finance high-quality carbon offset projects.[17] Learn more.

HP MPS end-to-end solutions for HP branded devices can help businesses reduce and offset the carbon impact of printing by estimating the total carbon emissions from HP branded printing solutions using HP's proprietary Sustainable

Impact Reporting and Analytics (SIRA) tool.[18] The tracking and metrics used to ensure that offsets are carried out effectively are managed by SIRA.

HP Instant Ink helps home users and microbusinesses remain productive by ensuring they never run out of ink or toner.[19] The service anticipates when the cartridge is running low and sends replenishments as well as new recycling envelopes (for ink cartridges) or recycling labels/information (for toner cartridges) automatically.[20] Customers using this service save up to 50% on the cost of ink[21] or toner.[22] We expanded this service from 18 to 37 countries in 2021, including introducing or expanding access to cartridge recycling in some of those locations.[23]

In 2021, we launched the pilot phase of our HP Instant Ink with Planet Partners project in Germany. Introduced to several hundred Instant Ink subscribers, the initiative allows customers to choose renewed ink cartridges instead of new ones. Renewal reduces the use of materials such as virgin plastics and microchips. The pilot increases the total number of times a cartridge is used to two (including one reuse) and we are working to further increase the total number of uses to four. Each four-piece set of HP 953 cartridges saves the equivalent of more than eight 0.5 liter (16.9 ounce) bottles' worth of plastic. Once cartridges can no longer be renewed, they are responsibly recycled by HP Planet Partners.

Industrial graphics

HP offers Print as a Service in our industrial graphics portfolio with the Indigo click-charge per-print and monthly service business models, which include supplies and spare parts. We continually invest in innovations to extend the lifespan of supplies and spare parts.

HP PrintOS is a cloud-based print production operating system that makes it easy to manage any number of print jobs, increasing press utilization, automating production, and delivering accurate color consistently between runs, across presses, and across sites. HP also provides services to repair, renew, and upgrade our industrial graphics presses, as well as consumables recycling and end-of service solutions.

Product repair, reuse, and recycling

We design HP products to use resources efficiently and to last a long time. When they reach the end of their service, our robust repair, reuse, and recycling programs help ensure that products and materials are repurposed, keeping them at their highest-value state for as long as possible. These programs reduce waste, can give materials and products renewed life, and support our drive toward a more materials-efficient circular model.

See HP's Statement on E-Waste and Used Electronic Equipment.

Customer take-back programs

HP provides take-back programs (see next page) in 77 countries and territories worldwide[24] through a global network of reuse and recycling vendors.

2025 GOAL

Recycle 1.2 million tonnes of hardware and supplies by 2025, since the beginning of 2016

PROGRESS THROUGH 2021

Recycled

764,800

TONNES

HP global take-back programs for customers*

Program	Description		Progress in 2021
Repair and reuse			
Hardware	Our remanufacturing programs help to extend hardware lifespan, with the aim of reducing environmental impacts from replacing products that still have useful life. We provide customers with guidance about how to repair their own HP products. See Durability, repairability, and reusability. HP Device Recovery Service provides commercial customers reverse logistics, data sanitization with a certificate, a sustainability benefit report, and the fair market value of the device. Watch our video.	Our Hardware Reuse Standard outlines our requirements for vendors and subvendors who provide reuse, remanufacturing, or remarketing services for HP. Reuse vendors must comply with the Media Handling Standard for information security (included in the Hardware Reuse Standard), which requires the full and documented erasure or destruction of all data-containing devices.	6.29 million units of hardware repaired (35,300 tonnes) 2.15 million units of hardware reused (7,200 tonnes)** 6.8% overall repair and reuse rate of relevant HP hardware sales worldwide***
Recycling**			
Hardware Available in 67 countries and territories	HP recycles hardware (both HP and non-HP) that cannot be economically repaired or reused. Consumers, home office, and commercial users have various free recycling options for used equipment, including HP recycling vendors that provide take-back and recycling services or free drop-off for our products in many countries. We belong to compliance systems to comply with producer responsibility requirements of the European Union Waste from Electrical and Electronic Equipment (WEEE) Directive***** and end-of-life legal obligations in countries across our Americas, Asia Pacific and Japan, and Europe, Middle East, and Africa regions. In the United States, customers can drop off hardware at Best Buy stores through our closed-loop recycling program.	HP Recycling Services offers custom recycling programs for commercial and enterprise customers, which include reverse logistics and data sanitization with a certificate if they purchase that service. Watch our video showing the recycling process. Recycling vendors must comply with the Hardware Recycling Standard. Recycling vendors must comply with the Media Handling Standard for information security (included in the Hardware Recycling Standard), which requires the full and documented erasure or destruction of all data-containing devices. We publish disassembly instructions for use by end-of-life recyclers or treatment facilities.	108,800 tonnes of hardware recycled 15.6% overall recycling rate of relevant HP hardware sales worldwide******* 92% of total volume of products and materials taken back in 2021 was reused or recycled by HP or by a third party
Ink and toner cartridges Available in 68 countries and territories	HP provides free and convenient ways to recycle used Original HP Ink and Toner Cartridges and Samsung toner cartridges. Home and commercial customers can return Original HP Ink and Toner Cartridges for free to more than 18,500 authorized sites worldwide. Free pickup and mail-back options are available in most countries.	See how we recycle ink cartridges and toner cartridges. Recycling vendors must comply with the HP Supplies Recycling Standard.	10,300 tonnes of Original HP and Samsung toner cartridges recycled 84% of materials recovered used in other products, and 0% went to landfill 1,500 tonnes of Original HP Ink Cartridges recycled 67% of materials recovered used in other products, and 0% went to landfill

We also offer responsible processing for batteries and recycling for large format media/supplies, 3D consumables, and packaging. These offerings vary by location.

* Descriptions of offerings in this table are as of report publication. Performance data is as of October 31, 2021. Availability of offerings varies by location. View full list of reuse and recycling programs by country.

** Reused material is defined as recovered products or components of products that are used for the same purpose for which they were conceived. A reused product/part should replace a new product/part shipment, and the product/part needs to have been used by a user and refurbished before being sent to a different user. Prior to 2021, this data also included some units remarketed to customers that had not been previously used and refurbished. Beginning in 2021, most repair and reuse data is based on the actual weight for every product, adjusted for estimated amounts that were recycled or for which no issues requiring repair were found. Prior to 2021, data was estimated based on the average weight of each product category.

*** The repair and reuse rate is based on the weight of hardware products returned for repair and reuse compared to the weight of our product sales during the year.

**** Recycling volumes in 2021 were adversely impacted in some locations by lockdowns and customer behavior impacted by the COVID-19 pandemic.

***** During 2021, 41,600 tonnes of waste electronic equipment was collected on HP's behalf to comply with producer responsibility requirements of the EU WEEE Directive, compared to 92,600 tonnes of HP electronic equipment placed on the relevant markets during the year. Data includes EU countries in which the authorities or the legislative system provide visibility of the recycling volume allocated to HP. Take-back volumes related to non-EU legislation are excluded.

****** The recycling rate is based on the weight of hardware products returned for recycling compared to the weight of our product sales from seven years ago (the estimated average lifespan of our products). It is impractical for HP to report the recycling rate by product category, as materials are not typically sorted at collection points. This rate also does not include packaging recycling, due to limited data available from recyclers.

Product reuse and recycling vendors

We work with a global network of vendors to provide product reuse and recycling services to customers around the world. To promote transparency and drive social and environmental standards in the electronics industry supply chain, we publish a detailed list of our reuse and recycling vendor sites, updated annually.

Vendor audits

Our specialized reuse and recycling vendors are required to follow environmentally responsible processing techniques and comply fully with relevant regulations. HP prefers our vendors to attain third-party certification (R2, e-Stewards, or WEEELABEX), in line with EPEAT® and HP Recycling Standards. In addition, we commission third-party audits to monitor vendor conformance with our high standards and ensure that returned items are processed appropriately. We contract with Environmental Resources Management (ERM) to audit vendors for conformance with the following policies and vendor standards:

- Export of Electronic Waste to Developing Countries Policy
- HP Supplier Code of Conduct
- Reuse and Recycling Standards

HP uses a risk-based approach to prioritizing reuse and recycling vendor audits, and all vendors must undergo an audit at least every three years. Vendors are assessed on environmental, health, and safety practices and performance, and audits ensure there is no "leakage" of materials to facilities outside our approved vendor network.

Vendors with identified nonconformances must submit corrective action plans within 30 days and address those items within 90 days. In extreme cases, we will cease business with vendors that lack sufficient transparency or are unwilling to make the changes we require.

Through ERM, HP audited 25 vendor facilities in 14 countries during 2021. This represented 23% of reuse vendor facilities and 32% of recycling vendor facilities. This included repeat audits of 15 vendor facilities to evaluate their efforts to improve performance. Because 28% of major nonconformances occurred at sites audited for the first time, HP's engagement brought best practices, enabling immediate performance improvements. HP has closed investigations of 100% of the major nonconformances identified in 2021. All sites with major nonconformances will be re-audited the following year to determine whether improvements are sustained.

Immediate priority findings[25] are the most serious type of vendor nonconformance, and require immediate action. During site audits in 2021, three immediate priority findings were identified at two recycling vendor sites upon re-audits. In all cases, we worked closely with the vendor to resolve and close the findings. This underlines the importance of revisiting these vendor locations in the following year to confirm closure is sustained.

Read a statement from ERM.

Reuse and recycling vendor audits

	2019	2020*	2021
Initial audits	4	10	10
Repeat audits	30	21	15
Countries	24	22	14
Major nonconformances identified	59	82	50
Major nonconformances resolved**	100%	100%	100%*
Immediate priority findings	1	4	3

*2020 data is revised due to calculation errors in the methodology from the previous year.

** As of May 2022.

Categories of major nonconformance

percentage of total

	2019	2020*	2021
Health and safety	34%	43%	29%
Environment	14%	16%	13%
Hazardous substance/ emergency response	10%	5%	12%
Insurance	5%	4%	4%
Subvendor use and audits	3%	7%	13%
Other**	34%	25%	29%

*2020 data is revised due to calculation errors in the methodology from the previous year.

** Includes site security and controls, management systems, labor, data destruction, transboundary shipments, and approved dispositions of processed materials. Findings related to data destruction were limited gaps in processes, not breaches of data security.

Energy efficiency

Energy consumed by our products during use is among the largest contributors to our carbon and water footprints. To help our customers decrease energy consumption and GHG emissions, we design for energy efficiency and offer convenient service-based solutions that are designed to deliver increased value to customers through reduced environmental impact and capital costs. We use multiple metrics to assess progress and drive improvement.

2025 GOAL

Reduce HP product-use GHG emissions intensity by 30% by 2025, compared to 2015[26]

PROGRESS THROUGH 2021

HP has achieved this goal for the second year in a row, with a

39%

decrease through 2021, compared to 2015 (therefore, we will not report on this goal moving forward)

Personal systems

Since 2019, the energy consumption of our personal systems products has dropped by 18%, on average. This included average estimated reductions in energy consumption of 27% in notebooks, 40% in workstations, and 18% in displays. Ongoing design improvements in 2021, including more efficient CPUs and power supplies, contributed to continued reductions in the typical energy consumption of our notebooks and workstations. Increased sales of Chromebooks and other notebooks, which tend to use less energy than desktop PCs, were also a factor.

Reduction in energy consumption of HP personal systems products*

% decrease since 2019

	2019	2020	2021
Desktops	0%	-17%	-22%
Notebooks	0%	24%	27%
Workstations	0%	15%	40%
Displays	0%	6%	18%
Overall	**0%**	**14%**	**18%**

* The average energy consumption of HP products was estimated annually between 2019 and 2021 using high-volume products for all product lines including notebook, desktop, All-in-One, workstation, and thin client computers, as well as displays. Averages are calculated using the most heavily loaded ENERGY STAR configuration as a representative for individual platforms, weighted by products sold. Desktops, Notebooks, Workstations, and Displays data is averaged performance data for multiple product lines weighted by units sold. Data in the "Overall" row for all years stated is weighted by units sold.

These improvements more than offset a 22% average estimated increase in energy consumption of desktops between 2019 and 2021, due largely to increased memory (primarily between 2019 and 2020).[27]

See personal systems eco labels information, including ENERGY STAR®.

Home and office printing

Original HP Toner Cartridges with HP EcoSmart black toner deliver more energy-efficient printing of premium-quality pages.[28] When HP EcoSmart black toner became available in 2019, this new toner formulation contributed to customers using an average of 20% less energy when printing compared to predecessor printing systems not using HP EcoSmart black toner. In 2020, HP transitioned additional HP JetIntelligence platforms to the HP EcoSmart black toner formulation, enabling even more customers to experience the improved energy efficiency of this advancement in low-melt toner technology. Learn more.

The HP Smart Tank 600, 6000, 700, and 7000 printer series have been designed to reduce GHG emissions from the printing experience, with the lowest carbon footprint of any of our home and office printing solutions. They are ENERGY STAR qualified and EPEAT® registered, and include around 25% recycled plastic content, including ocean-bound plastics.

See printer eco label information, including ENERGY STAR.

Product use carbon and water footprints

GHG emissions associated with product energy use equaled 8,700,000 tonnes of CO_2e in 2021, 31% of our overall carbon footprint. This decrease of 11% in absolute emissions compared to 2020 was driven by reductions in product energy use and by the continued impact of COVID-19 on sales of different product lines, particularly a shift toward Chromebooks, other notebooks, and InkJet printers, which tend to be lighter and more energy efficient than desktop PCs and LaserJet printers.

Product energy use represented 54% of our water footprint, due to the water used for cooling during electricity generation. This indirect water consumption related to product use equaled 78,900,000 cubic meters, 19% lower than the prior year, due to the same factors that decreased GHG emissions.

See product use carbon and water footprint data.

Sustainable materials

To create a circular and net zero carbon economy, we must gain the most value possible from the materials we use, and reduce our overall demand. We use increasing amounts of recycled content plastics (including ocean-bound plastics), and recycled content metals in our products, and we focus on packaging innovation to eliminate unnecessary packaging materials and plastic. HP brand paper and paper-based packaging use recycled or renewable[29] materials, and we are exploring renewable materials use in our hardware products as well.

HP proactively identifies and evaluates materials used in our products and throughout our supply chain. We prioritize materials for replacement, or for transition to a recycled or renewable alternative, based on environmental, social, and supply impacts.

We publish information on the material content of typical HP personal systems and printers, and continue to expand our full materials disclosure program. In 2021, we more than doubled the number of EPEAT-registered HP products and the number of products for which we are collecting a substance inventory. We collected an inventory of more than 90% of the substances by weight used in 79% of HP EPEAT 2021-registered personal systems products.[30]

In 2021, we used 956,400 tonnes[31] of materials in our products and packaging, 2% more than in 2020. This was primarily due to including commercial printers, scanners, ink and toner, and spare parts in the data, which more than offset a shift toward lighter printers better suited to printing at home and reduced paper sales. Of the materials we used in 2021, 39% were circular by weight (reused, recycled, or renewable). See Data for more detail about HP materials use.

Responsible chemistry

We aspire to a world where our products and operations use materials and chemicals that cause no harm. For more than two decades, we have worked to move the electronics industry toward safer alternatives to materials of concern. We assess published lists of substances of concern, customer preferences, new or upcoming legal requirements, and sound scientific analysis that reveals a potential impact on human health or the environment. This approach also improves circularity by increasing the reusability and recyclability of our products. See key milestones in our Green Chemistry Timeline.

The HP Materials and Chemical Management Policy guides how we specify materials and chemicals for use in products, packaging, and manufacturing processes. This policy applies to all HP employees and businesses worldwide and extends to our suppliers.

We developed our General Specification for the Environment (GSE) in 1998. It includes a full list of our material restrictions for products, packaging, and manufacturing process chemicals. The GSE goes beyond worldwide regulatory requirements and is updated annually. HP is committed to compliance with all applicable laws and regulations, including material restriction requirements under restriction of hazardous substances (RoHS) legislation.

When exploring safer alternatives to materials currently in use, we follow a precautionary approach, use the National Academy of Sciences publication *A Framework to Guide Selection of Chemical Alternatives*, and incorporate the GreenScreen® for Safer Chemicals methodology. We screen all ingredients in HP-formulated inks using the GreenScreen methodology, as part of our new product development process.

We also contribute to standards, legislation, and improved approaches to use of materials in the IT sector. In 2021, we became a Founding Signatory of the Toward Zero Exposure program by Green America's Clean Electronics Production Network (CEPN), to protect workers from chemical hazards in the electronics supply chain. Learn more.

We are involved in several initiatives under the Clean Production Action coalition, including the Chemical Footprint Project (CFP), which is part of our work with the Business-NGO Working Group (BizNGO). In the 2020 CFP survey, HP was recognized as a frontrunner, and shared our answers and scores publicly.

We continually innovate to reduce use of materials of concern. Highlights in 2021 included:

- 83% of personal systems product series are low halogen.[32]
- 45% of EPEAT®-registered personal systems products contain GreenScreen Benchmark 2 or 3 plasticizers and flame retardants.[33]
- About 79% of InkJet printers were shipped without USB cords and many of the others were shipped with shorter cords, avoiding approximately 34 million meters of cords.

Increase recycled content

We are both a supplier and a user of recovered materials, incorporating recycled and recyclable content into new HP products. This helps to accelerate global market development for recovered and recycled materials, to support progress toward a circular economy. 95% of HP PC and home and office print hardware introduced since 2020 contains a minimum of 5 grams of recycled content.[34]

Plastic

Our primary focus is on increasing recycled plastic use, due to issues related to plastic waste and pollution. During 2021, we used a total of 32,000 tonnes of postconsumer recycled content plastic in HP products, equivalent to 13% of overall plastic use. See Data for detail by product group.

HP's strategy to use plastics responsibly is to:

- Reduce plastic use by making our products smaller and removing unneeded plastic from packaging.
- Substitute plastic in packaging where feasible with more sustainable materials such as recycled or certified fiber.

In 2021, HP collaborated with Ford and Lavergne to reuse spent 3D-printed parts and powder, turning them into injection-molded fuel-line clips used in the Ford Super Duty F-250. As well as closing a waste loop, these injection-molded parts made from recycled HP PA 12 have better chemical and moisture resistance than conventional versions, are 7% lighter, and cost 10% less.

2025 GOAL

Use 30% postconsumer recycled content plastic across HP's personal systems and print product portfolio by 2025[35]

PROGRESS IN 2021

13%

achieved

- Replace virgin plastic with recycled plastic wherever possible.
- Source recycled plastic from locations where HP can have positive environmental and social impact, such as ocean-bound plastic.
- Invest in take-back and recycling.

In 2021, HP joined an industry collaboration with Dow Packaging & Specialty Plastics, Reifenhäuser, Cadel Deinking, and Karlville to demonstrate a closed-loop concept for printed pouch packaging. The project showed HP Indigo inks could be removed effectively from the recycled pouches, and new high-quality pouches could be produced using the recovered resin. Learn more.

We use increasing amounts of recycled content across our product portfolio:

- HP's EliteBook 840 G9 is made with at least 50% recycled aluminum in the product enclosure,[36] 5% ocean-bound plastic in its speaker enclosure, 50% postconsumer recycled content plastic in its keycaps, and 30% postconsumer recycled content plastic in the bezel, and the outer box packaging is 100% sustainably sourced.[37] It is EPEAT® Gold registered, ENERGY STAR® qualified, and TCO certified.
- HP's Dragonfly G3, launched in March 2022, is made from 50% recycled plastic from DVDs, 5% ocean-bound plastic in its speaker enclosure, and 90% recycled magnesium in its product enclosure, while the packaging and fiber cushions are 100% sustainably sourced.[38] It is EPEAT Gold registered, ENERGY STAR qualified, and TCO certified.
- The new HP ENVY Inspire 7955e All-in-One Printer is made using 45% postconsumer recycled content plastic. It is EPEAT Silver registered, recyclable through HP Planet Partners, and supports Forest First printing, where HP protects or restores forests in equal measure to every page printed.[39]

Through 2021, we manufactured over 5.4 billion Original HP and Samsung cartridges using a cumulative 134,000 tonnes of recycled plastic, including from recycled HP Cartridges. This has kept 962 million Original HP Cartridges and an estimated 143 million apparel hangers and 5.5 billion postconsumer plastic bottles out of landfills, instead upcycling these materials for continued use. More than 85% of our Original HP Ink Cartridges contain 4–75% postconsumer recycled content, and 100% of Original HP Toner Cartridges contain 1–75% postconsumer or post-industrial recycled content.[40]

The OMEN by HP 25L Gaming Desktop achieved EPEAT Gold, is ENERGY STAR qualified, and contains 2% postconsumer recycled content plastic.

- HP L700 and L800 Latex printers and the new HP PageWide XL printer are made using 20–30% postconsumer recycled content plastic. Each is also EPEAT registered and ENERGY STAR qualified, and uses ink that is UL ECOLOGO® certified—while the PageWide XL ink also carries the Nordic Swan certification.

Metal

Metal is an increasing focus for HP, particularly as more personal systems products transition away from plastic and we expand our use of recycled metal to more product lines such as some consumer notebooks.

Metals make up a large portion of the materials in personal systems products, so we work with suppliers to source metals with a high proportion of recycled content for some personal systems products (see boxes), including up to 75% recycled content aluminum and up to 90% recycled content magnesium. These metals are more likely to be recyclable through existing infrastructure than materials such as carbon fiber, and still meet the demanding industrial design requirements of our products. This decreases environmental impacts associated with mining and producing virgin materials, including energy use and associated GHG emissions.

To further improve the impacts of metal, we are also working to increase the use of postconsumer recycled content and introduce the use of recycled steel.

RECYCLED METAL IN PERSONAL SYSTEMS

The HP EliteBook x360 1030 G8 is designed and manufactured with 75% recycled aluminum in its top cover and 90% recycled magnesium in its bottom deck and cover.

HP ECO-CARTON INK CARTRIDGE

As part of our continuing shift from plastic to alternative materials, our new HP Eco-Carton Ink Cartridge for use with HP large format printers, such as the HP Latex 700/800 printer series, contains recycled and certified fiber, as well as 45% postconsumer recycled content plastic from our closed-loop recycling process, beverage bottles, and UL-validated OBP resins. With an additional 500ml carton to complement the existing 1 liter cartridge, use of the Eco-Carton expanded in 2021 to new Latex 700/800 printers, PageWide XL printers, and Z-series Pro printers.

Customers can recycle the outer carton locally and return the inner bag for free via HP Planet Partners, where available for these products, which will avoid any materials going to landfill.[41] The HP Eco-Carton Ink Cartridge reduces plastic use per liter of ink by 80% and decreases life cycle GHG emissions by 66% compared to a plastic ink cartridge, due to savings associated with manufacturing and transport.[42]

Tackling ocean plastics

Since 2016, our ambitious program in Haiti has helped to tackle the growing challenge of ocean-bound plastics (OBP). In partnership with the First Mile Coalition and our supplier partners, we have built a self-reliant OBP supply chain that contributes to the circular economy and provides income and education opportunities locally.

Our plastic washing line produces clean, high-quality recycled plastic for use in HP products, and has simplified our OBP supply chain in Haiti by eliminating a washing step off the island. This has increased the value of plastic collected and the prices that collectors receive. In 2021, in collaboration with Lavergne Haiti, we committed additional funding to support a productivity pilot designed to improve efficiency in collection, logistics, and processing while increasing material quality and average collector income.

During the year, we supported collectors through the political unrest caused by the assassination of Haiti's president in July and the devastating impact of the earthquake in August, and the HP Foundation donated over US$300,000 to WORK, UNICEF, and Direct Relief.

By using OBP in our products, we create consistent demand for plastic collectors. Since 2016, we have used 1,298 tonnes of OBP in our products—equivalent to more than 102 million 16.9 ounce (500ml) bottles—preventing this material from reaching waterways and oceans.

To drive change across and beyond our industry, we collaborate with a range of initiatives and organizations:

- NextWave Plastics convenes leading technology and consumer-focused companies to develop the first global network of OBP supply chains. In 2021, we collaborated on development of the Plastics Framework for Socially Responsible Ocean-Bound Plastic Supply Chains. This reflects our commitment to collector-centered OBP initiatives, codified in our UL OBP certification, which requires us to document and describe how we work to mitigate risks present in informal OBP collection infrastructure.
- Ocean Heroes Network, co-founded by Captain Planet Foundation and Lonely Whale, with support from HP, produces OH-WAKE, a new quarterly online magazine with information to help readers build community, become inspired, and learn how to apply their skills to a future with clean seas.
- The NGO WORK in Haiti provides on-site learning centers for the children of parents who work on recycling efforts. These centers are equipped with the latest technology, including HP laptops and printers using cartridges that include some content from waste plastic collected locally.
- Ocean Plastics Leadership Network is a membership community dedicated to addressing ocean plastic pollution. We joined as founding members in 2020.

We use OBP in an increasing number of HP products across our portfolio, and have launched more than 300 new products around the world that contain small quantities of OBP since 2017.[43] Examples include:

- Personal systems products such as the HP Pavilion x360 15 Convertible PC (5% OBP in the speaker enclosure) and the HP Z1 Entry Tower G8 (5% OBP in the speaker enclosure and bezel).
- The new Z series, launched in 2021, is the first full series of HP displays to contain OBP, including in large parts such as the stand (5%) and rear cover (5%).
- HP Presence is the world's first conferencing solution made with OBP. HP Presence meeting room solutions contain 5% OBP in the speaker enclosure.
- Exclusively from HP, many Original HP integrated printhead ink cartridges contain OBP (minimum of 5%), validated by UL.[44]

- Project STOP collaborates with governments and communities in Southeast Asia to create effective waste management systems that eliminate plastics leakage into the ocean, and provides replicable solutions. As a technical partner, we support the organization's work to create a circular waste management system in East Java, Indonesia.

- HP joined the Trash Free Seas Alliance®, launched in 2012 by Ocean Conservancy, which develops innovative and pragmatic solutions to remove marine debris and plastics from oceans.

Renewable materials

HP focuses on sourcing renewable[45] materials that are responsibly managed in order to protect ecosystems and resources for future generations. We strive to ensure that our paper and fiber-based packaging are derived from recycled or certified content, and we are working to eliminate the use of single-use plastic packaging by shifting to fiber-based packaging. To continue expanding our use of renewable materials we are exploring the feasibility of using more biobased plastics in our hardware products.

Paper and forestry products

Paper is integral to the printing process, so healthy, resilient forests are essential to the future of HP's business. Our forest-positive vision for printing focuses on creating enduring positive change for forest environments.

Through the design of our printers and software—including defaulting many print fleets to double-sided printing and reducing paper waste through HP Managed Print Services—we help customers print more responsibly.

HP's Sustainable Paper and Wood Policy was the first forestry policy published by an IT company. We require our suppliers and licensees to follow this policy for the paper, packaging, and wood incorporated into HP products that they provide.

We require that all HP brand paper, paper-based packaging, and wood in products is derived from recycled or certified sources. We continue to give preference to Forest Stewardship Council® (FSC)-certified fiber where available. Programme for the Endorsement of Forest Certification (PEFC™) certification or relevant national certification schemes can also be used if they comply with our Sustainable Paper and Wood Policy.

We work with World Wildlife Fund's (WWF) Forests Forward program, FSC, and our suppliers to continually improve our programs related to the sourcing of virgin fiber and to increase the amount of certified fiber in our products and packaging. We analyze our supply chain to understand areas of specific risk (due to weak regulation or ecosystem vulnerability) and create tailored strategies as needed. HP reports progress annually to WWF's Forests Forward and CDP's forests program.

HP brand paper sold during 2021 represented 0.5% of our carbon footprint. HP is taking steps to make paper use in printing more efficient, through product design features such as pull printing and automatic two-sided printing. In addition, our HP+, carbon neutral HP Managed Print Services, and sustainable forestry initiatives help to reduce and offset emissions associated with printers, Original HP supplies, and paper due to raw material extraction (including forest impact), manufacturing, transportation, and use.

Since 2016, HP brand paper has been derived from recycled or certified sources, and since 2020 this has also been the case for paper-based packaging for home and office printers and supplies, PCs, and displays.[46] By sourcing recycled or certified fiber, HP has established processes to guard against potential deforestation in our supply chain. In 2021, the amount of FSC-certified fiber in HP brand paper continued to exceed 55% by weight. For packaging, we have implemented a conformance assurance program for our suppliers to maintain this accomplishment in the future.

In 2021, we also announced a goal to counteract deforestation for non-HP paper used in HP products and print services by 2030.[47] This is part of our plan to scale up investment in forest restoration, protection, and other initiatives under the HP Sustainable Forests Collaborative. HP's aggressive goals not only focus on HP brand paper and packaging, but also address deforestation that goes beyond its own fiber sourcing to include the paper used in its printing products and services.

HP Indigo and HP PageWide Press printers are complemented by recently updated media locators for customers that provide lists of media confirmed to be compatible with these products. These lists include designations for media that have FSC certification and other environmentally preferable attributes.

HP ColorPRO and ColorLok® technologies help us raise standards across the paper industry, by requiring stringent sustainability standards from paper producers who license these technologies from us. Learn more.

HP paper impacts, 2021

tonnes

HP printer and copier paper sold	193,900
Paper-based packaging for home and office printers and supplies, PCs, and displays*	139,900

* Packaging is the box that comes with the product and all paper-based materials inside the box. Packaging for commercial, industrial, and 3D products, scanners, personal systems accessories, and spare parts is not included.

HP brand paper and packaging fiber sourcing, 2021*

tonnes

Certified fiber	227,800
Recycled fiber	105,700

* All HP brand paper is derived from certified sources; paper-based packaging for PCs, displays, home and office print, and supplies is reported by suppliers as recycled or certified, with a minimum of 97% by volume verified by HP. Packaging is the box that comes with the product and all paper-based materials inside the box. Packaging for commercial, industrial, and 3D products, scanners, personal systems accessories, and spare parts is not included.

Other materials

We continue to explore the use of other renewable materials. For example, we are evaluating the sustainability attributes of plastics made from biobased feedstocks rather than fossil fuels and have created criteria to guide the product development teams as they choose materials for new products. Every bioplastic feedstock must be individually evaluated using LCAs to fully understand its environmental and social impacts and confirm that it is less impactful than the material it would replace. Bioplastic feedstocks considered for use in products must be legal, renewable, and sustainably grown without impacting regional food security, land use practices, or critical ecosystems—as verified through a credible crop management certification standard. Also, the use of bioplastic feedstocks must not impact the recyclability of the plastic resins, so they can continue to cycle through the economy.

The HP Spectre x360 14 has the world's first keyboard mechanism incorporating agricultural waste feedstock.[48] During 2021, we launched the Spectre x360 16, which also has a keyboard mechanism incorporating agricultural waste feedstock.[49]

Packaging innovation

Our sustainable packaging strategy has three focus areas, aiming to enhance customer experience while driving progress toward a circular and net zero carbon economy:

- **Eliminate** unnecessary packaging material, space, and hard-to-recycle materials such as plastic foam.
- **Innovate** packaging designs to use materials with lower environmental impact, such as sustainable fiber and recycled plastics.
- Prioritize high recycled content and easily recyclable materials that can readily **circulate** through the economy.

Watch a video to learn how HP is tackling the plastic packaging challenge, and learn about our work to sustainably source renewable materials and counteract deforestation.

To address packaging at end-of-life, we offer take-back services and regularly update the Recycle your HP packaging guide to help consumers avoid sending packaging materials to landfill.

2025 GOAL

Eliminate 75% of single-use plastic packaging by 2025, compared to 2018[50]

PROGRESS IN 2021

44%

reduction, from an average of 221 grams/unit in 2018 to 124 grams/unit in 2021

Key initiatives in 2021

The following is a selection of the many packaging innovation projects at HP designed to advance the circular economy. In 2021, we completed more than 30 new packaging innovation projects that reduced our environmental impact.

Eliminate

HP is shifting away from plastic, foam, and other hard-to-recycle materials, which have been traditionally used in packaging for most personal systems and printing products. For example:

- **Personal systems:** In 2021, we shipped almost 65 million units of personal systems products in molded fiber or hybrid foam/fiber packaging, representing about 74% of units shipped during the year and more than double the number shipped in fiber packaging in 2020. This included 1.8 million units transitioned from foam packaging during the year, eliminating 407 tonnes of hard-to-recycle expanded plastic foam.
- **Printing:** In 2021, we eliminated over 300 tonnes of hard-to-recycle expanded plastic foam from the packaging of more than 5 million printer units (see Circulate for more detail).

Innovate

We continue to improve the tooling design and fabrication process in the molded fiber industry with our 3D printing technology, and in 2021, we shipped more than 150,000 HP product units with cushions made using this proprietary technology. See a video about the HP Molded Fiber Advanced Tooling Solution.

- **Packaging:** We developed a paper wrap for notebooks that protects the device exterior and replaces the traditional plastic bag. In 2021, we launched one platform with paper wrap packaging, and we plan to launch more in 2022.
- **Warehouse emissions:** At selected HP ink supplies warehouses, we switched from traditional softwood pallets to pallets constructed with laminated veneer lumber, reducing carbon footprint per pallet.
- **Bulk shipping:** By shipping more than 56,000 notebooks, over 184,000 desktop PCs, and about 1,300 workstations in bulk (where several products share one package), HP reduced packaging materials by 815 tonnes in 2021, while also decreasing GHG emissions associated with packaging and transportation.

Circulate

HP's efforts to eliminate single-use plastic packaging help to advance the circular economy. We continue to roll out easily recyclable, fiber-based packaging cushions created from recycled content. In 2021, we used approximately 19,000 tonnes of fiber-based packaging cushions, which

To enable innovative packaging for others, HP provides compostability certificates for fiber-based packaging printed with HP C500, HP PageWide Press, and HP Indigo industrial graphics printers. These certificates confirm that the ink used by the printers will not compromise customers' ability to compost packaging after use.

typically contain 100% recycled content, to ship HP notebook, desktop, and display units. This included 70 tonnes of fiber-based packaging from new projects launched in 2021.

We shipped 2.7 million A3 toner supplies in fiber-based packaging in 2021. During the year, we also transitioned more than 5 million printers to fiber-based packaging, including the HP DeskJet 1100, 2100, 2200, 2300, and 3700 series printers, using about 1,000 tonnes of recycled content fiber.

We also continued to use recycled material for pallets. In 2021, we used 97,000 pallets made from 50 tonnes of straw from China that might otherwise have been burned as agricultural waste. HP continued its recycled pallet program in North America, using 479,000 recycled pallets during 2021.

Learn how we gain more value from materials through our product repair, reuse, and recycling programs.

Learn about our approach to responsible minerals sourcing, which helps ensure there is no connection between the materials used in HP products and armed violence or human rights abuses.

Forest positive

The HP Sustainable Forests Collaborative, launched in 2019, is driving progress toward our 2030 goal to counteract deforestation for non-HP paper used in our printing products and print services. This commitment builds upon our ambition for HP Consumer Printing worldwide to be forest positive by 2025.[51] The Collaborative's objectives are to:

- Responsibly source HP branded paper and packaging (see Renewable materials).
- Restore, protect, and responsibly manage forests.
- Develop science-based targets for forests (see callout at right).
- Create print technologies for efficient paper consumption.
- Influence industry partners to inspire forest-positive action.

In October 2021, WWF announced its largest U.S. corporate partnership to date, as HP pledged US$80 million to support WWF to help address the potential impacts on forests from paper used in printing with HP printers. Starting in early 2022, the initiative will focus on approximately 950,000 acres (about 380,000 hectares) of forest landscapes, including working with communities, NGOs, and local academics to help protect, restore, and improve forest management. As part of this collaboration, WWF has joined HP's Sustainable Forests Collaborative in an advisory role.

Over the past two years, with WWF and regional stakeholders, HP helped to develop two pilot projects for science-based targets (SBTs) in Brazil's Atlantic Forest. These pilots supported continued development of the first standardized, place-based methodology for setting relevant targets for forest restoration. The findings highlighted the feasibility and importance of setting these targets within a regionalized context, and with consideration for existing regional and global thresholds. HP is the first company to pilot SBTs for forests using a new WWF methodology to estimate printing's impact on forests. Models developed with HP funding will also help identify regions for forest conservation and more accurately estimate the carbon and nature benefits of forest protection, management, and restoration actions.

2030 GOAL

Counteract deforestation for non-HP paper used in our products and print services by 2030.[52] Continue to source only sustainable fiber for all HP brand paper and paper-based packaging for home and office printers and supplies, PCs, and displays.[53]

PROGRESS IN 2021

During the year, we addressed 23% of our total fiber footprint for paper used in our products and print services. Our programs counteracted deforestation for non-HP paper representing 19% of this footprint.[54] Since 2020, all HP brand paper and paper-based packaging for home and office printers and supplies, PCs, and displays have been derived from recycled or certified sources.[55] During 2021, these equaled 4% of this footprint.

HP Forest Positive program

	2021**
Hectares responsibly managed*	14,270
Hectares restored*	150

*See HP Forest positive accounting manual for details about our program, methodology, and definitions.

**This data is based on the period October 1, 2020–September 30, 2021.

The HP Sustainable Forests Collaborative partners include Domtar, New Leaf Paper, Chenming Paper, Crown Van Gelder, Sylvamo, Mondi, Felix Schoeller, Lenzing Papier, Boise Paper, and Andhra Paper. Environmental NGOs Arbor Day Foundation and WWF play an advisory role.