

Amazon's United States of Plastic

The e-commerce giant's plastic packaging problem persists in the US, its largest and home market



Contents

03 | Executive Summary

05 | E-commerce growth and plastic packaging

07 | Amazon's success and scale brings broad responsibility

08 | Amazon's plastic packaging footprint: 2022 estimates

a. Estimate of Amazon's total plastic packaging footprint in the United States

b. Estimate of aquatic pollution from Amazon's plastic packaging

09 | The oceans need plastic reduction NOW

11 | Amazon is still ignoring its shareholders

12 | Amazon is lagging behind its competitors

13 | Amazon can't recycle its way out of its plastic problem

15 | Conclusions and recommendations

16 | Endnotes

Executive Summary

E-commerce has rapidly grown in recent years, accounting for 35% of all retail sales globally in 2022, up from 18% only five years earlier in 2017.¹ Amazon has played an enormous role in this growth, as one of the largest retailers on the planet.

The United States is where Amazon sells and ships the most. Nearly 70% of all of Amazon's net sales are tied to the U.S., according to the company's filings with the Securities and Exchange Commission.² But Amazon, after phasing out single-use plastic packaging in major markets including India and Europe, is refusing to commit to do the same in the U.S. — its largest and home market — as well as in other countries the company operates in where marine plastic pollution is a significant problem. Why are customers from the U.S. and other countries being left behind? According to research by YouGov, 85% of Amazon customers in the U.S. reported being concerned about plastic pollution.³

Oceana estimates that Amazon's plastic packaging waste for all transactions in the U.S. totaled 208 million pounds (94.3 million kilograms) in 2022, a 9.59% increase over the 190 million pounds (86 million kilograms) we estimated for 2021. This amount of plastic would, in the form of air pillows, circle the Earth more than 200 times. Oceana's calculations were based on market data obtained from the firms Mordor Intelligence and Euromonitor, as well as Amazon's reported replacement of mixed-material mailers (70% replaced in 2021, 99% in 2022)⁴ and delivery of shipments without additional Amazon delivery packaging (10% of shipments in 2021, 12% in 2022)⁵ in the U.S. For the years 2021 and 2022, Amazon

disclosed its total plastic packaging use for orders shipped through its global operations network but has neither reported its plastic use at the country level, nor for all transactions including those fulfilled by third party sellers.⁶ Amazon reported an 11.6% reduction in 2022 compared to 2021, largely due to its efforts to reduce plastic packaging outside of the U.S. Why can't Amazon commit to phasing out plastic packaging everywhere including in its biggest market, the U.S.?

Because the company refuses to phase out plastic packaging everywhere it operates, Oceana estimates that a large amount of plastic packaging continues to become marine plastic pollution. Using country-specific estimated rates of aquatic plastic pollution from a peer-reviewed study published in the journal *Science* in 2020,⁷ Oceana estimates that up to 22 million pounds (10 million kilograms) of Amazon's global plastic packaging waste generated in 2022 will end in the world's waterways and seas.

Plastic pollution, including the type of plastic used in Amazon's packaging, is devastating the world's oceans. Scientists have recently concluded that some of the most damaging impacts of plastic pollution with wide-reaching implications may be practically irreversible in ocean environments where effective clean-up efforts are improbable.⁸ Amazon's plastic packaging is made from the most common form of marine plastic litter in nearshore ocean areas — plastic film — which is the deadliest type of plastic to large marine animals.⁹

The company's shareholders have repeatedly called for Amazon to outline a plan for reducing its plastic

footprint by at least one-third on a global basis.¹⁰ The company could potentially achieve this target if it phases out plastic packaging in the U.S. as it has in other markets."

Amazon lags behind its competitors in its lack of a company-wide commitment to phase out plastic. In June 2023, Walmart – currently the largest retailer in the world according to Forbes' rankings¹¹ – pledged to eliminate the use of plastic mailers in the U.S. and globally.¹²

As retail giants, both companies are increasingly defining how goods are packaged. Amazon can solve its plastic problem on a global basis now and into the future if it commits to do so.

Oceana calls on Amazon to phase out plastic packaging in its largest market – the U.S. – and make a company-wide commitment to reduce the total amount of plastic packaging it uses by at least one-third by 2030.



© Shutterstock/Jenari

E-commerce Growth and Plastic Packaging

E-commerce accounted for 35% of all retail sales globally in 2022, up from 18% in 2017.¹³ Estimated at \$3.85 trillion in 2022, global e-commerce sales are expected to reach \$6.15 trillion in 2027.¹⁴ In the U.S., e-commerce revenue is forecasted to increase between 2024 and 2029 by over 51%.¹⁵

Globally, the e-commerce industry used a reported 3.88 billion pounds (1.76 billion kilograms) of plastic

packaging in 2022, 14.6% more than the previous year.¹⁶ Over 20% of this plastic was used in the U.S. Global e-plastic packaging waste is projected to reach 6.85 billion pounds (3.12 billion kilograms) by 2027, as shown in Table 1. Currently, about 36% of all plastic produced is used to create packaging, 85% of which ends up in landfills.¹⁷

The E-commerce Industry Produced 3.8 Billion Pounds of Plastic Packaging Waste in 2022

Table 1. Total e-commerce industry's annual and projected (2023-2027) plastic packaging waste

Year	2022	2023	2024	2025	2026	2027
million kilograms	1,759	1,992	2,242	2,516	2,805	3,105
million pounds	3,879	4,392	4,944	5,548	6,185	6,847

Source: Mordor Intelligence





As shown in Figure 1, protective packaging (including bubble wrap and air pillows) made up 1.37 billion pounds (622 million kilograms), or 35.4%, of total global plastic packaging weight in 2022. Plastic pouches and bags (including Amazon mailers, envelopes, bags, and bubble-lined bags) made up more than 1.2 billion pounds (557 million kilograms), or 31.7%, of total

plastic packaging weight. Shrink films made up 462 million pounds (210 million kilograms), or 11.9%, of total plastic packaging weight. Meanwhile, 815 million pounds (370 million kilograms), or 21% of the total weight, were a mix of other plastic products like foams or gel packs.

Bubblewrap, Air Pillows, and Plastic Mailers are Ubiquitous

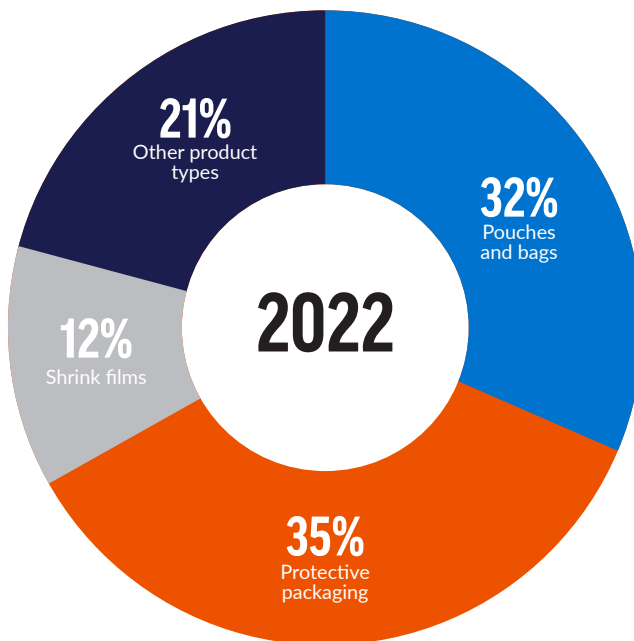


Figure 1. Global e-commerce plastic packaging market by product type, 2022

Source: Mordor Intelligence

Amazon's Success and Scale Brings Broad Responsibility

As one of the biggest retailers on the planet, Amazon is increasingly defining how our goods are packaged. In 2022, Amazon's global net sales reached nearly \$514 billion, up 9.4% from nearly \$470 billion in 2021.¹⁸ According to company filings with the Securities and Exchange Commission, nearly 70% of these sales were in the U.S.,¹⁹ where Amazon currently holds a 30.5% share of the retail e-commerce market.²⁰

Amazon has refused to commit to phase out plastic packaging in the U.S. — its largest and home market — and in other countries including Brazil, Canada, and Mexico. In contrast, the company claims to have phased out single-use plastic delivery packaging in other major markets, specifically all European countries, India, and Australia.²¹ For example, in October 2022, the company wrote that it had "stopped packing items in single-use plastic delivery bags at Amazon fulfillment centers across Europe,"²² and has previously claimed that it has done the same in India.²³ Amazon has also replaced plastic air pillows with recyclable paper in Europe, India, and Australia.²⁴

In the U.S. and Canada, Amazon claims to have replaced 99% of mixed-material mailers (i.e., paper pouches with a bubble wrap inner lining) with a new recyclable paper padded mailer, though it has not disclosed the proportion of total packaging that this one specific type of mailer represents.²⁵

Amazon has also pioneered other new packaging approaches and technology such as Frustration Free Packaging,²⁶ and the conversion of packaging machines to use paper instead of plastic.²⁷ In addition, the company recently announced that it is testing reusable

packaging bags in the United Kingdom and France.²⁸ Amazon should be leaning into these innovations in the U.S. and everywhere with bold commitments, leading the transition away from single-use plastic packaging.

Globally, Amazon reported in July 2023 that — following the commitments it has made to date — its plastic use declined by 11.6% from 2021 to 2022 for shipments from its fulfillment centers.²⁹ The company reported in 2021 that it used 107,169 tons (97,222 metric tons) of single-use plastic for packaging shipped through its operations network on a global basis. This amount declined in 2022 to 94,706 tons (85,916 metric tons). A reported 3% increase in the number of packages shipped globally without Amazon delivery packaging is partially responsible for this decrease, but these figures clearly indicate that the commitments the company has made in its top markets outside of the U.S. are having an impact.

According to research by YouGov, 85% of polled Amazon customers in the U.S. reported being concerned about plastic pollution.³⁰ To address these concerns and ensure that Amazon solves its plastic problem on a global basis now and into the future, **it's time for Amazon to do more by focusing on its largest and home market.** The company reported in October 2023 that it had completely eliminated single-use plastic delivery packaging in one of its fulfillment centers in Euclid, Ohio and that "this work is part of a multiyear effort to convert U.S. fulfillment centers to paper."³¹ This is a positive development, but Amazon has not made specific time-bound commitments for the multiyear effort, nor has it specified the number of fulfillment centers that will be included.

Amazon's Plastic Packaging Footprint: 2022 Estimates

Estimate of Amazon's total plastic packaging footprint in the United States

Oceana estimates that Amazon's plastic packaging waste in the U.S. in 2022 (for all transactions on its platforms) totaled 208 million pounds (94.3 million kilograms), an 9.59% increase over 2021 (190 million pounds or 86 million kilograms).³² This amount of plastic would, in the form of air pillows, circle the planet more than 200 times.³³

Oceana estimated Amazon's plastic packaging footprint for the U.S. — where the company has yet to commit to reduce its use of single-use plastic packaging — by analyzing e-commerce and packaging market data. Over 800 million pounds (363 million kilograms) of e-commerce plastic packaging was used in the U.S. in 2022 and Amazon's retail e-commerce market share in the U.S. for the same year was 30.5%.³⁴ Oceana assumed that Amazon's plastic packaging footprint correlates with its market share following discussions with e-commerce packaging experts who agreed that this is a valid method to estimate Amazon's packaging use.³⁵ An estimate based on this correlation was adjusted downwards to account for the company's reported replacement of 99% of mixed-material mailers in the U.S. with paper padded mailers in 2022 (70% in 2021)³⁶ and delivery of 12% of shipments in the U.S. without additional Amazon delivery packaging in 2022 (10% in 2021).³⁷ Oceana also requested data directly from Amazon about its plastic footprint in the U.S., which the company has not yet shared or made public.

Amazon sells its products and enables third-party sellers to sell their products through its 'Amazon Marketplace' service. Items purchased from third-party sellers can either be shipped directly by the seller or shipped (fulfilled) by Amazon, through its network of fulfillment centers. To date, Amazon has reported only

on plastic packaging used to ship packages handled through its fulfillment centers and global operations network. Oceana's estimate of Amazon's plastic packaging footprint for the U.S. is of the company's total e-commerce plastic packaging use in the country as a whole, including items shipped directly by third-party sellers.

Estimate of aquatic pollution from Amazon's plastic packaging

Oceana estimates that up to 22 million pounds (10 million kilograms) of Amazon's plastic packaging waste produced globally in 2022 will end up in major rivers, lakes, and the ocean.

In a 2020 peer-reviewed scientific study published in the journal *Science*, Borrelle et al. estimated that in 2016 between 21 and 25 million tons (19 and 23 million metric tons), or 11% of plastic waste generated globally entered freshwater and marine ecosystems, which includes major rivers, lakes, and the ocean.³⁸ The study also projected the annual amount of plastic waste entering aquatic ecosystems from 2016-2030 in 173 countries, representing 97% of the world's population. Based on the model developed for this study, Oceana estimated the total amount of Amazon's global e-commerce plastic packaging waste from 2022 that will enter aquatic ecosystems. In our calculations, we used the upper estimate of the rate of plastic waste entering aquatic systems under the "business as usual" forecast scenario developed by Borrelle et al. and applied this to our estimate of Amazon's global plastic packaging use in 2022.³⁹ The upper bound is the most appropriate given plastic packaging's low recycling rate and greater likelihood of ending up in the waste disposal system and potentially in aquatic environments.

The Oceans Need Plastic Reduction NOW

The oceans are facing irreversible catastrophic change because of plastic pollution. A peer-reviewed article from 2021 by Macleod et al. published in *Science* concluded that some of the most damaging impacts of plastic pollution with wide-reaching implications may be practically irreversible in ocean environments where effective clean-up efforts are improbable.⁴⁰ These forward-looking impacts include changes to carbon and nutrient cycles; habitat changes within marine ecosystems; biological impacts on endangered or keystone species (e.g., death, impaired reproduction); increased toxicity of seawater; and related societal impacts.

Amazon's plastic packaging carries a high risk of ending up in the oceans or other natural environments

because it cannot easily be recycled. Much of Amazon's plastic packaging, including plastic bags, bubble-lined plastic bags, paper mailers with air bubble padding, air pillows, and bubble wrap, is made from plastic film (the thin, flexible "plastic shopping bag" type of plastic). Amazon itself has noted that plastic film is "not commonly accepted through municipal recycling programs."⁴¹ Instead, plastic film may be, at best, landfilled or incinerated, and at worst, littered or blown away by the wind from open dumpsites into nearby environments. Amazon ships products internationally to over 100 countries worldwide. The likelihood that the plastic packaging (or other forms of plastic waste) enters the ocean or other aquatic ecosystems is influenced by where that waste is generated and inadequately managed.⁴²



© Oceana/Enrique Talledo



© Oceana



© Oceana/Danny Ocampo

Plastic film is one of the most common forms of plastic pollution found across aquatic environments. If ingested, plastic film is often lethal to marine animals.

Plastic film has been found to be the most common form of marine macroplastic pollution (plastic pieces at least 0.2 inches or 5 millimeters across) found in nearshore ocean areas.⁴³ A scientific study from 2021 authored by Morales-Caselles et al. that reviewed survey data from around the world, found that items made from plastic film such as bags, wrappers, and industrial packaging were the first, fourth, and eighth most common types of plastic pollution found across all aquatic environments surveyed, respectively.⁴⁴ According to the lead author of the study, these items represented 27% of the litter found in the aquatic environment.⁴⁵

Amazon's plastic packaging can be lethal if it finds its way into marine ecosystems. A study by Roman et al. from 2020, found film-like plastics — including plastic bags and wrappers — to be responsible for the biggest proportion of large marine animal deaths caused by oceanic debris, with whales, dolphins, and sea turtles

the most impacted.⁴⁶ In the same study, film-like plastics were also found to be the most common item ingested by large marine animals in the data reviewed. Plastic bags and other packaging made from plastic film may be neutrally buoyant in seawater and float in the water column where these animals search for food, leading to their ingestion. The scientists studying these deaths have recommended that reducing the production and use of flexible film-like plastics at their source is the least expensive option to address this problem and most likely to be successful.⁴⁷

The oceans need plastic pollution reduction now to stop the infliction of harm on ocean creatures and prevent irreversible and catastrophic environmental (and economic) consequences. The companies that are contributing to this crisis through continuing to rely on single-use plastic packaging — particularly where alternative solutions exist — have a moral responsibility to take urgent action to cut their reliance on plastic.

Amazon is Still Ignoring its Shareholders

For the third year in a row, at Amazon's most recent annual meeting in 2023, over 30% of Amazon shareholder votes supported an As You Sow shareholder proposal asking the company to set a plastic packaging reduction goal.⁴⁸ Thirty-two percent of shareholders votes supported the plastic reduction proposal, complementing a 49% vote in 2022 and a 35% vote in 2021.

Ahead of the annual meeting, Oceana called on Amazon employees (who are also company shareholders) at Amazon's headquarters in Seattle, Washington to win support for the resolution. This effort included canvassers, mobile billboards, posters, and a LinkedIn campaign. Oceana also sent a letter to Amazon investors in support of the resolution and created a dedicated website for the endeavor.

Shareholder resolutions are non-binding, which means that even if a majority vote is secured, this won't necessarily force a change in company policy. Even so, companies often take some form of action if 30% to 40% of votes are cast in favor.⁴⁹ A strong result indicates that this is an issue of significant concern for shareholders and ignoring this signal is not likely to be in the interest of the company, nor its board.

Despite consistently strong support for the resolutions, Amazon continues to ignore this effort by its shareholders, failing to meet their demands for the company to outline a plan for how it can achieve a one-third reduction in its use of plastic packaging by 2030.



© Oceana

In May 2023, Oceana called on Amazon shareholders in Seattle, Washington, to vote for the company to support a plastic reduction proposal.

Amazon is Lagging Behind its Competitors

Several of Amazon's competitors have made global commitments to reduce their use of single-use plastic packaging. Walmart — currently the largest retailer in the world according to Forbes' rankings⁵⁰ — announced in June 2023, that “Moving forward, nearly all orders shipped in plastic mailers from fulfillment centers, stores, and marketplace items shipped with Walmart Fulfillment Services, will arrive in recyclable paper bag mailers.”⁵¹ The company claimed that this decision “is expected to eliminate 65 million plastic bag mailers from circulation in the U.S. by the end of the current fiscal year.”

Chinese e-commerce giant JD.com — currently the ninth largest retailer in the world⁵² — is taking a different approach through scaling-up reusable packaging, aiming to reduce its use of single-use packaging entirely. In 2023, the company announced it will gradually introduce 1.5 million units of reusable express packaging and promote a shared recycling model for such packaging.⁵³ By the end of 2024, the company anticipates eliminating over 100 million disposable packages — including plastic bags and foam boxes — through this initiative alone, which will be deployed in 30 cities across China.



© Shutterstock/Lewis Burnett

Amazon Can't Recycle Its Way Out of Its Plastic Problem

Most of Amazon's plastic packaging is made from plastic film, which cannot reliably be recycled. Amazon has communicated publicly and to its shareholders that it "recognize[s] that plastic film is a difficult material to process, and most municipal recycling programs do not accept it."⁵⁴ Despite this, Amazon still promotes recycling as a solution to its large plastic packaging waste problem. There are several references to plastic recycling programs in the company's recent sustainability report and on the company's website — Amazon Second Chance — which offers information for customers about how to recycle plastic packaging and links to alternative recycling sites. Customers who visit Amazon's Second Chance website and scroll down to images of plastic packaging (such as the blue and white bubble-lined Amazon plastic mailer) are told that "some cities offer curbside recycling. Where not available, use designated store drop-off locations where plastic film is accepted" and then are given a link to "find your drop-off location."

Recycling is not the solution the company should be relying on. Investigations have shown that the "drop-off locations" that Amazon directs customers to for plastic recycling are not reliable in ensuring plastic packaging actually gets recycled. In 2023, the Last Beach Clean Up and CALPIRG tracked Amazon packages put in drop-off bins in the Los Angeles area recommended through the Amazon Second Chance website.⁵⁵ Of the 10 plastic items dropped off in recycling bins with a tracker, four ended up in a landfill, two ended up in a waste transfer center (meaning they're likely headed to a landfill), two went to out-of-state or out-of-country recycling centers, and two were last tracked in the Port of Los Angeles headed to unknown locations. None of them ended up in California recycling centers.

Oceana's research also revealed the ineffectiveness of the solutions offered by Amazon for plastic film recycling. In 2021, Oceana sent mystery shoppers in 25 cities in the U.S. and U.K. into 186 stores identified by the Amazon Second Chance website as local recycling "drop-off locations" for plastic packaging. The secret shoppers found that in 41% of these stores, representatives said they could not accept Amazon plastic packaging. Managers at more than 80% of the stores visited told the secret shoppers that they did not know their store was listed as a drop-off location for the recycling of Amazon packaging. Additionally, when the secret shoppers looked into the plastic recycling bins, they only saw Amazon packaging in the bins in 17% of the stores surveyed. Several of the bins were labeled as accepting "plastic bags only," which may confuse Amazon shoppers unaware that their plastic mailers and other packaging are supposed to go in the "plastic bags only" bin. When interviewed by Oceana, local municipal recycling officials in both the U.S. and the U.K. confirmed that they are not able to recycle Amazon's plastic packaging. They explained that this packaging continues to be put in recycling bins and contaminates other plastic.

Oceana also conducted a multi-part study in the same 25 cities in the U.S. and the U.K. to investigate what happens to Amazon's plastic packaging waste (including what customers do with their packaging). The study found that Amazon customers do not know that municipal recycling facilities will not accept Amazon packaging for recycling (and instead put it into the landfill). Oceana surveyed 1,400 Amazon Prime customers about how they dispose of their packaging and found that three out of four customers are sending their plastic packaging to the landfill, intentionally

and unintentionally. Over one-third of the Amazon customers surveyed put their plastic packaging in their curbside recycling bins even though this means the plastic packaging will likely end up being landfilled. Of those who reported placing their plastic in the bin, 84% believed the plastic would be recycled; 36% said they simply put their Amazon packaging in the trash; 19.3% said they set the packaging aside; and only

5.9% said they bring the packaging to store drop-off locations (like the ones linked to Amazon's Second Chance website). Of all Prime customers surveyed, 92% said that they thought Amazon should reduce its use of plastic packaging. Nearly 95% of the Amazon Prime customers surveyed were concerned about plastic pollution's impact on the oceans.



© Shutterstock/Nordroden

Plastic film is not accepted by most municipal recycling facilities – in large part because it can damage sorting machinery.

Conclusion and Recommendations

Amazon claims “Success and Scale Bring Broad Responsibility” but the scale of the company’s strategies to reduce plastic do not yet match its vast footprint.⁵⁶ As a company built on taking risks with exciting new ideas, it should be leaning into innovations that show great promise for plastic reduction – like reusable packaging – in the U.S., and everywhere it operates.

Amazon has the power to implement company-wide changes that would significantly reduce the amount of

single-use plastic consumers use on a day-to-day basis, including the plastic that ends up in our oceans. It is now clear that the company can do this and is doing this in its major markets, but not in the U.S., its largest market.

To tackle its growing plastic problem, Oceana calls on Amazon to phase out plastic packaging in its largest market – the United States – and make a company-wide commitment to reduce the total amount of plastic packaging it uses by at least one-third by 2030.



© Oceana/Ferdinand Edralin

Endnotes

- ¹ Barthel M, Faraldi A, Robnett S, et al. (2023) In Its Layers, Winning Formulas for E-Commerce Growth, slide 5. In: BCG. Available: <https://www.bcg.com/publications/2023/winning-formulas-for-e-commerce-growth> Accessed Mar 16, 2024.
- ² Amazon.com, Inc. (2022) Form 10-K, For the Fiscal Year Ended December 31, 2022, pg. 67. Available: <https://www.sec.gov/Archives/edgar/data/1018724/000101872423000004/amzn-20221231.htm> Accessed Mar 16, 2024.
- ³ Oceana (2020) YouGov survey for Oceana: Amazon Customers Want a Plastic-Free Packaging Choice. Available: https://drive.google.com/file/d/1kpRjYg2bdQzOD_cbo125W9sOhghgoYYF/view?usp=drive_link Accessed Mar 18, 2024.
- ⁴ Amazon reported replacing nearly 70% of its mixed-material mailers with paper padded mailers in the U.S. in 2021 in its 2021 Sustainability Report: Amazon (2022) Delivery Progress Every Day, pg. 29, Available: <https://sustainability.aboutamazon.com/2021-sustainability-report.pdf> Accessed Mar 18, 2024; and Amazon reported replacing 99% of these mailers in the U.S. in 2022 in its 2022 Sustainability report: Amazon (2023) Building a Better Future Together: 2022 Amazon Sustainability Report, pg. 29. Available: <https://sustainability.aboutamazon.com/2022-sustainability-report.pdf> Accessed Mar 18, 2024.
- ⁵ Amazon reported delivering 10% of its U.S. shipments without additional delivery packaging in 2021, and 12% in 2022, in its 2022 sustainability report: Amazon (2023) Building a Better Future Together: 2022 Amazon Sustainability Report, pg. 27. Available: <https://sustainability.aboutamazon.com/2022-sustainability-report.pdf> Accessed Mar 18, 2024.
- ⁶ Amazon reported using 97,222 metric tons of single-use plastic across its global operations network in 2021, and 85,916 metric tons in 2022, noting an 11.6% decrease, in its 2022 sustainability report: Amazon (2023) Building a Better Future Together: 2022 Amazon Sustainability Report, pg. 29. Available: <https://sustainability.aboutamazon.com/2022-sustainability-report.pdf> Accessed Mar 18, 2024.
- ⁷ Borrelle SB, Ringma J, Lavender Law K, et al. (2020) Predicted growth in plastic waste exceeds efforts to mitigate plastic pollution. *Science* 369(6510): 1515-1518. doi: 10.1126/science.aba3656.
- ⁸ Macleod M, H Arp HP, Tekman MB and Jaknhe A (2021) The global threat from plastic pollution. *Science* 373(6550): 61-65. doi: 10.1126/science.abg5433.
- ⁹ Morales-Caselles C, Viejo J, Martí E, et al. (2021). An inshore-offshore sorting system revealed from global classification of ocean litter. *Nature Sustainability* 4: 484-493. doi: 10.1038/s41893-021-00720-8; Roman L, Schuyler Q, Wilcox C and Denise Hardesty B (2020) Plastic pollution is killing marine megafauna, but how do we prioritize policies to reduce mortality? *Conservation Letters* 14(2): e12781. doi: 10.1111/conl.12781.

- ¹⁰ Shareholder proposals submitted by As You Sow asking Amazon to set a plastic reduction goal received 32% of shareholder votes in 2023, 49% in 2022, and 35% in 2021. For more information, see: As You Sow (2023) Investors Send Strong Third-Year Vote at Amazon Amidst New Plastic Action by Walmart. Available: <https://www.asyousow.org/press-releases/2023/6/8/investors-amazon-plastic-action-walmart> Accessed Mar 18, 2024.
- ¹¹ Debter L (2023) Global 200): Walmart Reclaims Top Spot From Amazon Among Retailers. In: Forbes. Available: <https://www.forbes.com/sites/laurendebter/2023/06/08/global-2000-walmart-reclaims-top-spot-from-amazon-among-retailers/> Accessed Mar 18, 2024.
- ¹² Walmart (2023) Walmart Doubles Down on Reducing Waste To Create More Sustainable Omnichannel Fulfillment Network. Available: <https://corporate.walmart.com/news/2023/06/01/walmart-doubles-down-on-reducing-waste-to-create-more-sustainable-omnichannel-fulfillment-network> Accessed Mar 18, 2024.
- ¹³ Barthel M, Faraldi A, Robnett S, et al. (2023) In Its Layers, Winning Formulas for E-Commerce Growth, slide 5. In: BCG. Available: <https://www.bcg.com/publications/2023/winning-formulas-for-e-commerce-growth> Accessed Mar 18, 2024.
- ¹⁴ Calculated from figures provided by: Barthel M, Faraldi A, Robnett S, et al. (2023) In Its Layers, Winning Formulas for E-Commerce Growth, slide 5. In: BCG. Available: <https://www.bcg.com/publications/2023/winning-formulas-for-e-commerce-growth> Accessed Mar 18, 2024.
- ¹⁵ Statista (2024) Revenue of the e-commerce industry in the U.S. 2019-2029. Available: <https://www.statista.com/statistics/272391/us-retail-e-commerce-sales-forecast/> Accessed Mar 18, 2024.
- ¹⁶ Value from dataset: Mordor Intelligence (2023) Global E-Commerce Plastic Packaging Market (2023-2028). Dataset prepared for Oceana.
- ¹⁷ World Economic Forum (2022) Top 25 recycling facts and statistics for 2022. Available: <https://www.weforum.org/agenda/2022/06/recycling-global-statistics-facts-plastic-paper/> Accessed Mar 18, 2024.
- ¹⁸ Mordor Intelligence (2023) Global E-Commerce Plastic Packaging Market (2023-2028). Report prepared for Oceana.
- ¹⁹ Amazon.com, Inc. (2022) Form 10-K, For the Fiscal Year Ended December 31, 2022, pg. 67. Available: <https://www.sec.gov/Archives/edgar/data/1018724/000101872423000004/amzn-20221231.htm> Accessed Mar 16, 2024.
- ²⁰ Amazon's retail e-commerce market share in the U.S. was obtained from Euromonitor.

- ²¹ As of 2022, Amazon had marketplaces in Australia, Belgium, Brazil, Canada, Egypt, France, Germany, India, Italy, Japan, Mexico, the Netherlands, Poland, Saudi Arabia, Singapore, Spain, Sweden, Turkey, the U.A.E., the U.K., and the U.S., with customers in other countries also ordering from these marketplaces. In 2022, the U.S., Germany, the U.K, and Japan were the largest markets by total sales. Source: Schmitt N (2024) With Amazon Around the World – The Amazon Marketplaces Worldwide in Focus. In: *Blank Space*
Available: <https://www.blankspace.eu/blog-posts-en/amazon-marketplaces-worldwide> Accessed Mar 16, 2024.
- ²² Amazon (2022) Amazon has stopped packing products in single-use plastic delivery bags in its own distribution networks in Europe. Available: <https://www.aboutamazon.eu/news/packaging/amazon-has-stopped-packing-products-in-single-use-plastic-delivery-bags-in-its-own-distribution-networks-in-europe>
Accessed Mar 18, 2024.
- ²³ Amazon (2020) Amazon India successfully eliminates 100% single-use plastic in packaging across its fulfilment centers. Available: <https://www.aboutamazon.in/news/sustainability/amazon-india-successfully-eliminates-100-single-use-plastic-in-packaging-across-its-fulfilment-centers> Accessed Mar 18, 2024.
- ²⁴ India: Amazon (2020) Moving towards plastic free packaging.
Available: <https://www.aboutamazon.in/news/operations/moving-towards-plastic-free-packaging>
Accessed Mar 18, 2024; Europe and Australia: Amazon (2023) Building a Better Future Together: 2022 Amazon Sustainability Report, pg. 26.
Available: <https://sustainability.aboutamazon.com/2022-sustainability-report.pdf> Accessed Mar 18, 2024.
- ²⁵ Amazon (2023) Building a Better Future Together: 2022 Amazon Sustainability Report, pg. 26.
Available: <https://sustainability.aboutamazon.com/2022-sustainability-report.pdf> Accessed Mar 18, 2024.
- ²⁶ Amazon (2018) Frustration-Free Packaging.
Available: <https://www.aboutamazon.eu/news/innovation/frustration-free-packaging> Accessed Mar 18, 2024.
- ²⁷ Amazon (2023) Amazon announces its first automated U.S. fulfillment center to eliminate plastic delivery packaging. Available: <https://www.aboutamazon.com/news/sustainability/amazon-fulfillment-center-eliminates-plastic-packaging> Accessed Mar 18, 2024.
- ²⁸ Amazon (2023) How Amazon is innovating to come up with the packaging of the future.
Available: <https://www.aboutamazon.eu/news/sustainability/how-amazon-is-innovating-to-come-up-with-the-packaging-of-the-future> Accessed Mar 18, 2024.
- ²⁹ Amazon (2023) Building a Better Future Together: 2022 Amazon Sustainability Report, pg. 29.
Available: <https://sustainability.aboutamazon.com/2022-sustainability-report.pdf> Accessed Mar 18, 2024.
- ³⁰ Oceana (2020) YouGov survey for Oceana: Amazon Customers Want a Plastic-Free Packaging Choice.
Available: https://drive.google.com/file/d/1kpRjYg2bdQz0D_cbo125W9sOhghgoYYF/view?usp=drive_link
Accessed Mar 18, 2024.
- ³¹ Amazon (2023) Amazon announces its first automated U.S. fulfillment center to eliminate plastic delivery packaging. Available: <https://www.aboutamazon.com/news/sustainability/amazon-fulfillment-center-eliminates-plastic-packaging> Accessed Mar 18, 2024.

- ³² Oceana updated its previous 2021 U.S. estimate for Amazon's plastic packaging footprint (reported in Oceana's 2022 report) applying the same method as for 2022, using e-commerce plastic packaging market data from Mordor Intelligence and Amazon's retail e-commerce market share data from Euromonitor, also factoring in reported plastic reductions by Amazon through its 'Ships in Own Container (SIOC)' program (10% of U.S. shipments in 2021) and through replacing mixed-material mailers with paper padded mailers (70% replaced in 2021). Amazon's packaging reductions in the U.S. for 2021 were reported in Amazon's 2021 and 2022 sustainability reports. Paper padded mailers: Amazon (2022) Delivering Progress Every Day: Amazon's 2021 Sustainability Report, pg. 29. Available <https://sustainability.aboutamazon.com/2021-sustainability-report.pdf> Accessed Mar 18, 2024; SIOC: Amazon (2023) Building a Better Future Together: 2022 Amazon Sustainability Report, pg. 29. Available: <https://sustainability.aboutamazon.com/2022-sustainability-report.pdf> Accessed Mar 18, 2024.
- ³³ The circumference of the earth is 1,577,727,360 inches (see: <https://bit.ly/3k6NiNb> Accessed Mar 18, 2024). According to Uline, a roll of 4,265 4 x 8 plastic pillows weighs 9.3 pounds or 459 air pillows per pound (see: <https://bit.ly/3etejsY> Accessed Mar 18, 2024). Translating Amazon's total estimated plastic packaging use of 208 million pounds into 4 x 8 air pillows totals 95,472,000,000 air pillows or enough to wrap around the planet, at a width of 4 inches, 242 times. Note - Uline, a major supplier, offers 4 x 8, 8 x 8, and 8 x 12 air pillows (see: https://www.uline.com/BL_7706/Storopack-Air-Cushioning Accessed Mar 18, 2024).
- ³⁴ E-commerce plastic packaging market data for the U.S. was obtained from Mordor Intelligence; and Amazon's retail e-commerce market share in the U.S. was obtained from Euromonitor.
- ³⁵ Oceana consulted experts at Mordor Intelligence and elsewhere to confirm the validity of our approach.
- ³⁶ Amazon reported replacing nearly 70% of its mixed-material mailers with paper padded mailers in the U.S. in 2021 in its 2021 sustainability report: Amazon (2022) Delivering Progress Every Day: Amazon's 2021 Sustainability Report, pg. 29. Available: <https://sustainability.aboutamazon.com/2021-sustainability-report.pdf> Accessed Mar 18; and replacing 99% of these mailers in the U.S. in 2022 in its 2022 sustainability report: Amazon (2023) Building a Better Future Together: 2022 Amazon Sustainability Report, pg. 29. Available: <https://sustainability.aboutamazon.com/2022-sustainability-report.pdf> Accessed Mar 18, 2024.
- ³⁷ Amazon reported delivering 10% of its U.S. shipments without additional delivery packaging in 2021, and 12% in 2022, in its 2022 sustainability report: Amazon (2023) Building a Better Future Together: 2022 Amazon Sustainability Report, pg. 29. Available: <https://sustainability.aboutamazon.com/2022-sustainability-report.pdf> Accessed Mar 18, 2024.
- ³⁸ Borrelle SB, Ringma J, Lavender Law K, *et al.* (2020) Predicted growth in plastic waste exceeds efforts to mitigate plastic pollution. *Science* 369(6510): 1515-1518. doi: 10.1126/science.aba3656.

- ³⁹ Oceana estimated Amazon's global plastic packaging use for 2022 through applying the same method and data sources as used in estimating Amazon's plastic footprint in the U.S.(see Footnote #32), to all countries where Amazon has a marketplace, and/or fulfillment center. This included Australia, Belgium, Brazil, Canada, Egypt, France, Germany, India, Ireland, Italy, Japan, Mexico, the Netherlands, Poland, Saudi Arabia, Singapore, Slovakia, South Africa, Spain, Sweden, Turkey, U.A.E., U.K, and the U.S. We factored in reported plastic reductions by Amazon for each country through its 'Ships in Own Container (SIOC)' program (assuming 12% in the U.S. and Canada, 7% in European countries, 6% in Australia, and 3% in Japan) and through other reported reductions in plastic packaging within Amazon's fulfillment network (e.g., additional reductions assumed in European countries, India, Japan, and Australia, which vary depending on the timing and extent of plastic reductions communicated by the company). The estimated totals from each country were then combined to calculate a global estimate.
- ⁴⁰ Macleod M, H Arp HP, Tekman MB and Jaknhe A (2021) The global threat from plastic pollution. *Science* 373(6550): 61-65. doi: 10.1126/science.abg5433.
- ⁴¹ Amazon (2022) Delivering Progress Every Day: Amazon's 2021 Sustainability Report, pg. 94. Available: <https://sustainability.aboutamazon.com/2021-sustainability-report.pdf> Accessed Mar 18, 2024
- ⁴² Borrelle SB, Ringma J, Lavender Law K, et al. (2020) Predicted growth in plastic waste exceeds efforts to mitigate plastic pollution. *Science* 369(6510): 1515-1518. doi: 10.1126/science.aba3656.
- ⁴³ Morales-Caselles C, Viejo J, Martí E, et al. (2021). An inshore-offshore sorting system revealed from global classification of ocean litter. *Nature Sustainability* 4: 484-493. doi: 10.1038/s41893-021-00720-8.
- ⁴⁴ Ibid.
- ⁴⁵ X post available: <https://twitter.com/padina/status/1471434265296519170> Accessed Mar 18, 2024.
- ⁴⁶ Roman L, Schuyler Q, Wilcox C and Denise Hardesty B (2020) Plastic pollution is killing marine megafauna, but how do we prioritize policies to reduce mortality? *Conservation Letters* 14(2): e12781. doi: 10.1111/conl.12781.
- ⁴⁷ Ibid.
- ⁴⁸ As You Sow (2022) Amazon.com Inc: Sustainable Packaging Policies for Plastics. Available: <https://www.asyousow.org/resolutions/2022/12/13-amazon-sustainable-packaging-policies-for-plastics-5pztj-pjx72> Accessed Mar 18, 2024.
- ⁴⁹ Reuters (2022) Amazon investor proposal to review plastic use narrowly fails to clear. Available: <https://www.reuters.com/business/amazon-investor-proposal-review-plastic-use-narrowly-fails-clear-2022-05-27/> Accessed Mar 18, 2024.
- ⁵⁰ Debter L (2023) Global 200): Walmart Reclaims Top Spot From Amazon Among Retailers. In: *Forbes*. Available: <https://www.forbes.com/sites/laurendebter/2023/06/08/global-2000-walmart-reclaims-top-spot-from-amazon-among-retailers/> Accessed Mar 18, 2024.

- ⁵¹ Walmart (2023) Walmart Doubles Down on Reducing Waste To Create More Sustainable Omnichannel Fulfillment Network. Available: <https://corporate.walmart.com/news/2023/06/01/walmart-doubles-down-on-reducing-waste-to-create-more-sustainable-omnichannel-fulfillment-network> Accessed Mar 18, 2024.
- ⁵² Debter L (2023) Global 200): Walmart Reclaims Top Spot From Amazon Among Retailers. In: *Forbes*. Available: <https://www.forbes.com/sites/laurendebter/2023/06/08/global-2000-walmart-reclaims-top-spot-from-amazon-among-retailers/> Accessed Mar 18, 2024.
- ⁵³ Pandaily (2023) JD Introduces 1.5 Million Reusable Express Packages. Available: <https://pandaily.com/jd-introduces-1-5-million-reusable-express-packages/> Accessed Mar 18, 2024.
- ⁵⁴ Amazon (2022) Investor Relations SEC Filings Details. Available: <https://www.sec.gov/Archives/edgar/data/1018724/000121465922005232/j414221px14a6g.htm> Accessed Mar 18, 2024.
- ⁵⁵ Beyond Plastic (2023) Are Amazon's packages as recyclable as the company claims? Available: <https://pirg.org/california/articles/does-amazon-recyclable-plastic-packaging-actually-get-recycled-well-maybe-not/> Accessed Mar 18, 2024.
- ⁵⁵ "Success And Scale Bring Broad Responsibility" is one of Amazon's 16 "Leadership Principles". Source: Amazon Leadership Principles. Available: <https://www.aboutamazon.com/about-us/leadership-principles> Accessed Mar 18, 2024.



Oceana is the largest international advocacy organization dedicated solely to ocean conservation. Oceana is rebuilding abundant and biodiverse oceans by winning science-based policies in countries that control one-quarter of the world's wild fish catch. With more than 300 victories that stop overfishing, habitat destruction, oil and plastic pollution, and the killing of threatened species like turtles, whales, and sharks, Oceana's campaigns are delivering results. A restored ocean means that 1 billion people can enjoy a healthy seafood meal every day, forever. Together, we can save the oceans and help feed the world. Visit [Oceana.org](https://www.Oceana.org) to learn more.