

An underwater photograph showing a dense accumulation of plastic waste, including bags, bottles, and fragments, floating in clear blue water. The scene is a stark representation of marine plastic pollution.

EXPOSED:

Amazon's enormous and rapidly growing plastic pollution problem

The Western world's biggest retailer's pandemic-fueled boom in plastic pollution, its futile recycling pledges, and the real solutions the company can implement to stop flooding our oceans with plastic.



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EXECUTIVE SUMMARY

- Oceana estimates that Amazon's plastic packaging waste in 2020 totaled 599 million pounds, a striking one-year increase of 29%, compared to Oceana's 2019 estimate of 465 million pounds. This amount of plastic would, in the form of air pillows, circle the planet more than 600 times.¹ Oceana also estimates, based on plastic waste pollution data from a peer-reviewed study published in *Science* in 2020, that up to 23.5 million pounds of this waste entered the world's waterways and seas. That is equivalent to dumping a delivery van's payload of plastic into the oceans every 67 minutes.²
- Amazon's recycling promises and claims do not add up and do not reduce the company's very large plastic packaging waste footprint. The type of plastic packaging used by Amazon – plastic film – is rarely accepted by municipal recycling programs. Despite this, 39% of 1,400 Amazon Prime customers surveyed by Oceana in 25 cities in the United States and the United Kingdom reported that they put their packaging in curbside recycling bins. Additionally, 41% of secret shoppers sent by Oceana into 186 stores Amazon claimed as alternative recycling drop-off points for plastic film (in these same 25 cities in the U.S. and UK) were told by store representatives that Amazon plastic is not accepted for recycling at their store.
- In contrast to the company's recycling programs, Amazon's actions to eliminate single-use plastic packaging in India³ and to increase the use of returnable and reusable packaging could be – according to Oceana's analysis – having a significant impact on reducing the company's plastic pollution problem. If the company expands its efforts to eliminate single-use plastic packaging in India worldwide, it could substantially reduce its plastic footprint. Amazon has shown that this is possible with its reported plans to eliminate single-use plastic packaging in Germany, one of the company's largest markets. Amazon ships hundreds of millions of packages⁴ a year in Germany and has a market share of more than 50%.⁵
- Amazon has – following rapid pandemic related growth – exceeded Walmart's total sales⁶ and is the largest retailer in the world (outside of China). The company is increasingly defining how retail products are packaged. It is critical for the oceans that the company leads the reduction of plastic pollution. Amazon needs to stop hiding behind ineffective solutions like plastic film recycling and instead leverage its innovative know-how and, as shown in India, Germany, and other efforts detailed in its sustainability report⁷, be a leader and take steps to reduce its plastic packaging waste footprint.

Oceana analyzed e-commerce and packaging market data, as well as a recent scientific report published in *Science* about predicted growth in plastic waste, that projects plastic pollution of aquatic ecosystems by country and found that Amazon's enormous plastic packaging footprint increased by 29% in comparison to Oceana's 2019 estimate. Amazon disputed Oceana's estimate in its 2020 report. Oceana, in response, asked the company to directly provide data about its plastic footprint to Oceana, which the company has not yet done. Oceana, therefore, continues to estimate the company's footprint based on publicly available data.

In 2020, according to Oceana's analysis, Amazon generated an estimated 599 million pounds, or 272 million kilograms (kg), of plastic packaging. This is the plastic used to ship purchases made on Amazon.com and includes air pillows or bubble wrap used to prevent products from moving within a package, and plastic mailers and plastic-lined paper envelopes to ship smaller products. Amazon packages are usually double-packed, with the original product already packaged, surrounded with plastic filling and an outer Amazon box.

E-commerce plastic packaging becomes plastic waste after a package is delivered. Almost all plastic waste is landfilled, burned, or enters and pollutes the environment, including waterways and oceans, where plastic can harm marine life.



Based on data derived from the scientific report about plastic pollution of aquatic ecosystems,⁸ Oceana estimates that in 2020, up to 23.5 million pounds (10.7 million kg) of Amazon's plastic packaging ended up in the world's freshwater and marine ecosystems as pollution. This amount is roughly equivalent to a delivery van's worth of plastic being dumped into major rivers, lakes, and oceans every 67 minutes.⁹

Plastic is a major source of pollution for the world's oceans. Scientists now estimate billions of pounds of plastic wash into the ocean every year.¹⁰ The plastics industry expects annual production will more than triple by 2050, far outpacing recycling (only 9% of all plastic waste produced to date has been recycled).^{11,12} Plastic packaging harms marine life and biodiversity when it enters the marine environment. Sea turtles and other animals mistake the kind of plastic used by Amazon – such as plastic bags – for food. Studies have estimated that 55% percent of sea birds, 70% of marine mammals, and 100% of sea turtles have ingested or become entangled in plastic and have found that plastic film is one of the deadliest forms of plastic for marine life.^{13,14}

Amazon plastic packaging falls into the category “plastic film,” a material that is extremely difficult to recycle. Most curbside recycling programs in the U.S., Canada, the UK, and other large markets for Amazon do not accept or recycle plastic film. Additionally, the small amount of consumer plastic film waste that is recycled is most often downcycled and used to create other products like commercial decking (rather than more plastic packaging and plastic film¹⁵). There is little evidence of recycling of plastic film (and packaging) already used by consumers on a large scale¹⁶ and, most importantly, little evidence that plastic film recycling reduces the amount of plastic packaging waste entering landfills and the environment (and the world's oceans).

Despite all this, Amazon promotes recycling as a solution to its large and growing plastic packaging waste problem. There are several references to plastic recycling programs in the company's recent sustainability report^{17,18} and on the company's website¹⁹ – Amazon Second Chance – that offers information for customers about how to recycle plastic packaging and links to alternative recycling sites. While the company offers some details about these programs, they do not specify the impact these efforts would have on reducing the company's very large plastic packaging waste footprint.

In 2021, Oceana conducted a multi-part study in 25 cities in the U.S. and the UK to investigate what happens to Amazon's plastic packaging waste, including what customers do with their packaging. Oceana surveyed 1,400 Amazon Prime customers in the 25 cities about how they dispose of their packaging and found that three out of four customers are – intentionally and unintentionally – sending their plastic packaging to the landfill.

- 39% of the Amazon customers surveyed put their plastic packaging in recycling bins even though this means the plastic packaging will likely end up being landfilled. 83.8% of those who reported placing their plastic in the bin believed the plastic would be recycled.
- 35.5% 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 by Amazon's Second Chance website).
- 91.4% of those surveyed said that they thought Amazon should reduce its use of plastic packaging. Nearly 95% of the Amazon Prime customers surveyed are concerned about plastic pollution's impact on the oceans.

We also sent mystery shoppers into 186 stores in these same 25 cities – identified as local recycling drop-off points for plastic packaging through links from the Amazon Second Chance website. 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 would presumably confuse Amazon shoppers unaware that their plastic mailers and other packaging are supposed to go in the “plastic bags only” bin.

In addition, Oceana interviewed local municipal recycling officials in the cities where the survey was conducted. Officials in both the U.S. and the UK confirmed to Oceana that they are not able to recycle Amazon plastic packaging and that this packaging continues to be put in recycling bins and contaminate other plastic.

Oceana's research 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) and that the plastic film recycling alternative system linked to Amazon is ineffective at best.

In contrast to its U.S. promotion of the failed recycling strategy, in India, Amazon recently committed to eliminate single-use plastic packaging after the Indian government enforced a sweeping ban on all single-use plastic. If properly implemented worldwide, the elimination of single-use plastic by Amazon would significantly reduce the company's plastic packaging footprint and contribution to marine plastic pollution. Oceana estimated that Amazon has reduced its single-use plastic packaging waste in India by 50% in this latest report based on news reports which, if correct, could reduce the company's global plastic footprint significantly. Unfortunately, Amazon has not publicly released data regarding its reduction of plastic packaging in India, and customer data (including unboxing videos uploaded to YouTube by Amazon customers in India) make it clear that some single-use plastic packaging is still in use.

The recent news²⁰ that Amazon will eliminate single-use plastic packaging in Germany demonstrates that the company can switch away from plastic packaging everywhere it operates. Germany is one of Amazon's largest markets. The company has a reported 53%²¹ market share in Germany. Oceana estimates that the company generated nearly 88 million pounds of single-use plastic packaging waste in Germany in 2020.

Oceana, with the support of more than one-third of the company's investors,²² calls on Amazon to take measurable steps globally to reduce its plastic footprint. Additionally, Oceana, with the backing of hundreds of thousands of individuals, calls on the company to offer plastic-free options at checkout everywhere around the world.



A plastic bag floats in the ocean. Marine life often mistake plastic bags and plastic film for food.

E-COMMERCE GROWTH AND PLASTIC PACKAGING

- Almost a third of the world's population is now buying online²³
- Amazon dominates the e-commerce market in almost all countries in which it operates^{24,25,26}
- The e-commerce industry used nearly 2.9 billion pounds (1.3 billion kg) of plastic packaging in 2020²⁷

2020 was marked by the COVID-19 pandemic which drove an enormous surge in e-commerce shopping. Consumers around the world increasingly made online purchases from home.

The number of overall online buyers is forecast to reach 2.1 billion in 2021, up from 1.66 billion in 2016.²⁸ More than a quarter of the world's population is now buying products online, and COVID-19 has further accelerated this shift. Estimated at \$3.35 trillion in 2019, pandemic-driven e-commerce sales rose sharply by 27.6% in 2020 to \$4.28 trillion and are expected to reach \$6.39 trillion in 2024.²⁹

Amazon, the leading e-commerce retailer in almost all large markets, reportedly recently surpassed Walmart's sales to become the largest retailer – online and offline – in the Western world. Only China has retail companies with larger operations.

Amid this surge of online buying, the amount of e-commerce plastic packaging worldwide has been estimated to have grown by 24% in 2020, with the highest growth in the Middle East (+60%).

Globally, the e-commerce industry used nearly 2.9 billion pounds (1.296 billion kg) of plastic packaging in 2020, according to analysts, and that number is estimated to more than double by 2026, as shown in Table 1. The highest growth by volume is expected for flexible plastic and plastic mailer markets over the medium term. This is the type of secondary or protective packaging (e-commerce packaging) that Amazon adds on top of the original product packaging after it is ordered online.

Packaging in e-commerce is often superfluous. As much as 98% of product packaging shipped in e-commerce was created for brick and mortar retail and to get potential buyers' attention browsing in a store rather than to be optimized for shipping to customers who purchased the product online. Leading industry analysts estimate that half of e-commerce packages ship with up to 55% empty space.³⁰

THE E-COMMERCE INDUSTRY PRODUCED 2.9 BILLION POUNDS OF PLASTIC PACKAGING WASTE IN 2020³¹

Table 1. Total e-commerce industry's annual plastic packaging waste

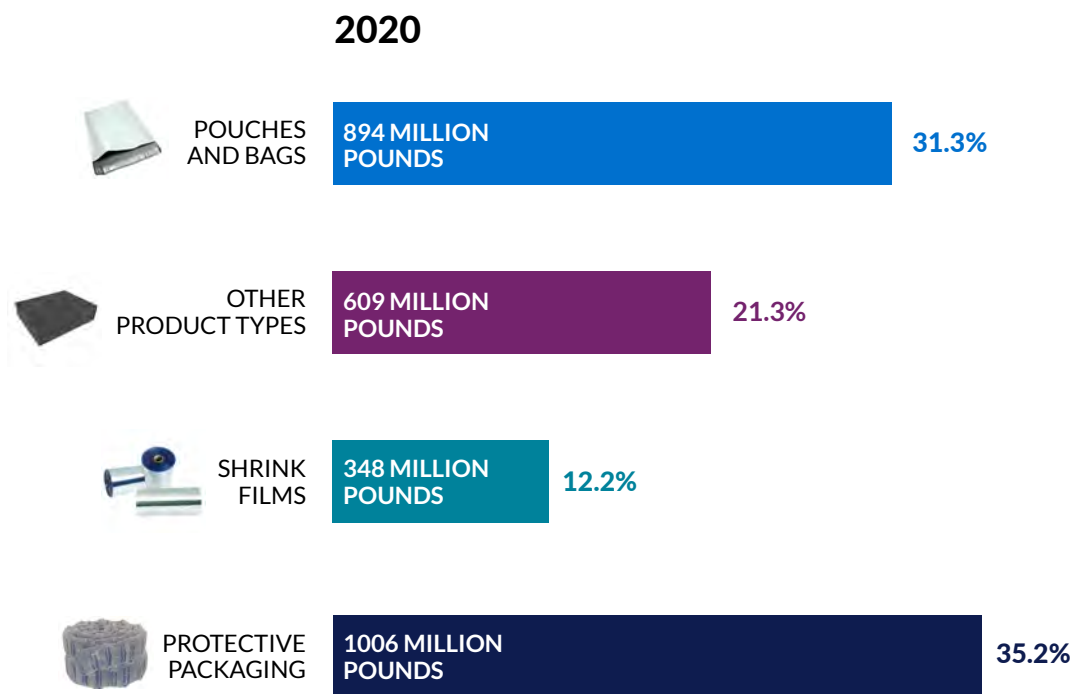
YEAR	2020	2021	2022	2023	2024	2025	2026
million kg	1,296	1,610	1,834	2,096	2,403	2,763	3,189
million pounds	2,857	3,549	4,044	4,621	5,297	6,091	7,031

Source: Mordor Intelligence

As shown in Figure 1 below, protective packaging (including bubble wrap and the kinds of air pillows that Amazon frequently uses) makes up 1 billion pounds (456 million kg), or 35%, of total plastic packaging weight. Plastic pouches and bags (including Amazon mailers, envelopes, bags, and bubble-lined bags) make up more than 894 million pounds (406 million kg), or 31%, of total plastic packaging weight. Shrink films make up 348 million pounds (158 million kg), or 12%, of total plastic packaging weight, and 609 million pounds (276 million kg), or 21%, of the total weight, are a mix of other plastic products like foams or gel packs.³²

BUBBLEWRAP, AIR PILLOWS, AND PLASTIC MAILERS ARE UBIQUITOUS

Figure 1. Global e-commerce plastic packaging market by product type, 2020



Source: Mordor Intelligence

Packaging in e-commerce is often superfluous.

As much as 98% of product packaging shipped in e-commerce was created for brick and mortar retail and to get potential buyers' attention browsing in a store rather than to be optimized for shipping to customers who purchased the product online.



AMAZON'S PLASTIC PACKAGING POLLUTION: 2020 ESTIMATES

- Amazon's plastic packaging footprint estimated to be nearly 600 million pounds in 2020, a 29% increase from 2019
- Up to 23.5 million pounds of Amazon's plastic polluted freshwater and marine ecosystems in 2020

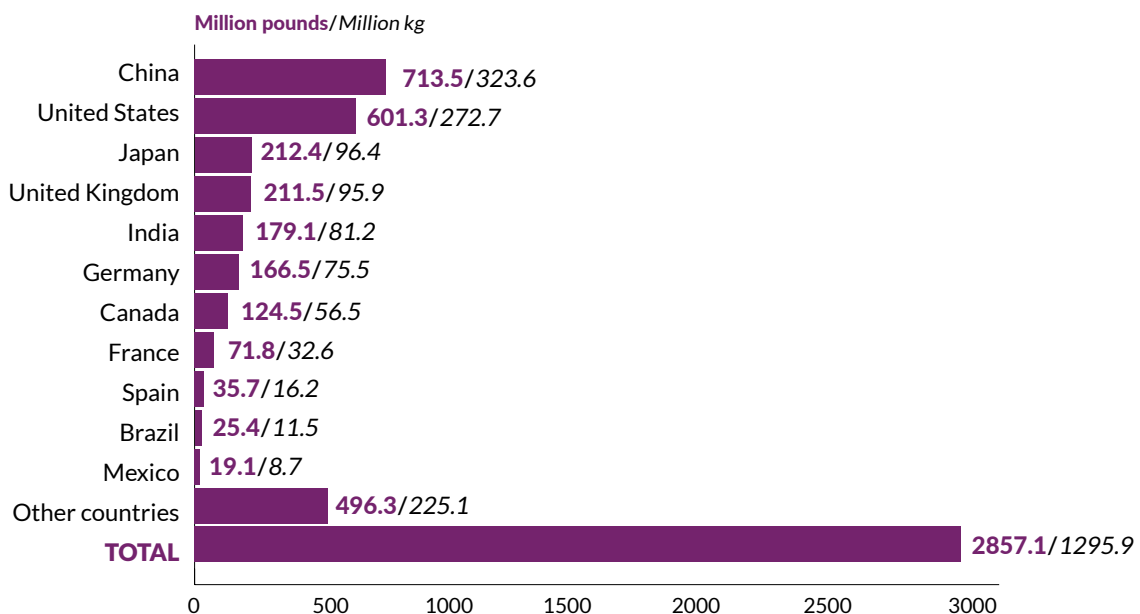
ESTIMATE OF AMAZON'S TOTAL PLASTIC PACKAGING WASTE FOOTPRINT

Oceana analyzed e-commerce and packaging market data, as well as a 2020 peer reviewed scientific report published in *Science* about predicted growth in plastic waste, that projects plastic pollution of aquatic ecosystems by country. Oceana also requested data directly from Amazon about its plastic footprint (which the company has not provided). Amazon has challenged the estimate provided in Oceana's 2020 report but has so far refused to respond to Oceana's multiple requests for the company's data.

According to industry analysts (and as shown in Table 2 below), in 2020, e-commerce businesses produced a total of 2.9 billion pounds of plastic packaging waste. The table below provides an overview of e-commerce plastic packaging used in the key markets included in the analysis. It is important to note that Amazon is the dominant e-commerce company in all the countries listed (except for China where Amazon does not sell to customers directly).

THE E-COMMERCE INDUSTRY PRODUCED 2.9 BILLION POUNDS OF PLASTIC PACKAGING WASTE IN 2020

Table 2. Total e-commerce industry's annual plastic packaging waste



Source: Mordor Intelligence

Oceana has obtained figures for overall e-commerce plastic packaging use for the countries analyzed and the world as a whole.³² We assume that Amazon's plastic packaging footprint correlates with its market share. This assumption has been discussed with e-commerce packaging experts who agreed that this is a valid method to estimate Amazon's packaging use, given the absence of published data from Amazon. Based on these data points, we calculated Amazon's plastic packaging footprint for the countries analyzed.

We also estimate that the nine analyzed countries make up about 93.5% of Amazon's e-commerce revenue, based on publicly available sales estimates.^{33,34} Assuming that the remaining 6.5% of revenue has the same proportionate footprint as the analyzed countries, the total plastic packaging footprint of Amazon is 599 million pounds or 272 million kg.

ESTIMATE OF MARINE PLASTIC POLLUTION FROM AMAZON PLASTIC PACKAGING

Table 3. Amazon's plastic packaging footprint

COUNTRY	PLASTIC PACKAGING WASTE IN E-COMMERCE (KG) 2020	ESTIMATED AMAZON MARKET SHARE 2020 (*2019) IN %	CALCULATED AMAZON PLASTIC PACKAGING FOOTPRINT 2020	
			in kg	in pounds
	Source: Mordor Intelligence	Source: Various (see endnotes)		
Brazil	11,512,429	5.00 ³⁵	575,621	4,621
Canada	56,457,145	49.30 ³⁶	27,833,372	61,362,082
Germany	75,513,767	53.00 ³⁷	40,022,296	88,234,060
India	81,236,983	31.20 ³⁸	12,672,969	27,939,115
Japan	96,352,856	25.70 ³⁹	24,762,684	54,592,373
Mexico	8,667,249	11.60 ⁴⁰	1,005,401	2,216,530
Spain	16,188,297	35.10 ^{41, 42}	5,682,092	12,526,869
United Kingdom	95,949,973	34.50 ⁴³	33,102,741	72,979,051
United States	272,739,034	39.70 ⁴⁴	108,277,397	238,710,798
Total for nine countries			253,934,574	559,829,906
Other countries with Amazon stores (6.5% of estimated turnover)			17,653,206	38,918,657
TOTAL			271,587,780	598,748,563

* India's plastic packaging footprint has been reduced by 50% for 2020 to reflect the company's commitment – as of June of 2020 – to eliminate single-use packaging in India.

In a 2020 peer-reviewed scientific study, Borrelle et al., published in *Science*,⁴⁵ the authors estimate that between 19 and 23 million metric tons, or 11%, of plastic waste generated globally in 2016 entered freshwater and marine ecosystems, which includes major rivers, lakes, and the oceans. They estimated the annual amount from 2016 to 2030 of inadequately managed plastic waste entering aquatic ecosystems from 173 countries, representing 97% of the world's population.

Based on this model, Oceana calculated the estimated percentage of Amazon's e-commerce plastic packaging waste entering major rivers, lakes, and the oceans in 2020 for the analyzed countries. We used the upper estimate of the business-as-usual scenario developed by Borrelle et al., given plastic packaging's low recycling rate and

therefore greater likelihood of ending up in the waste disposal system and potentially in aquatic ecosystems.

We used these ratios to estimate the plastic packaging waste generated by Amazon in these countries (shown in Table 4) to determine the possible pollution of major rivers, lakes, and the sea by Amazon plastic packaging.⁴⁶ To estimate the amount of plastic packaging waste reaching aquatic ecosystems generated in the remaining countries in which Amazon operates but which are not included in this country by country analysis, Oceana applied the Borelle study's estimated medium global average of plastic waste entering marine ecosystems for 2020, which is 14.05%.⁴⁷ In total, up to 23.49 million pounds (10.65 million kg) of Amazon plastic packaging waste is estimated to have entered freshwater and marine ecosystems in 2020 which is roughly equivalent to a delivery van's worth of plastic being dumped into the sea, rivers, and lakes every 67 minutes.

ESTIMATED LEAKAGE TO WATERWAYS, LAKES, AND OCEANS IN 2020 IN MILLIONS OF POUNDS

(MILLIONS IN POUNDS/KILOGRAMS)

Table 4. Estimate of Amazon's marine plastic pollution footprint

COUNTRY	ESTIMATED LEAKAGE TO WATERWAYS, LAKES AND OCEANS 2020	
	in kg	in pounds
Brazil	54,969	121,185
Canada	300,158	661,734
Germany	352,722	777,618
India*	3,850,951	8,489,894
Japan	2,025,660	4,465,815
Mexico	67,905	149,704
Spain	69,089	152,315
United Kingdom	423,107	932,791
United States	1,028,672	2,267,833
Other countries	2,480,275	5,468,071
TOTAL	10,653,507	23,486,962



Amazon packaging, including air pillows made from plastic film.
©Shutterstock / TonelsonProductions



Amazon shipping trucks.
©Shutterstock / Stephen Dewhurst

RECYCLING FAILURE: AMAZON PLASTIC PACKAGING

- Amazon's plastic packaging is “plastic film” and is not accepted by curbside recycling programs
- Amazon's recycling claims do not add up to a reduction in plastic pollution

CURBSIDE COLLECTION OF PLASTIC FILM (AMAZON'S PLASTIC PACKAGING)

Scientific reports have estimated that only 9% of all plastic waste ever produced has been recycled and 91% has ended up in landfills, incinerators, or the environment, including the oceans.⁴⁸ In response to questions regarding its plastic use, Amazon has said that it is addressing its plastic problem by pushing to make more of its packaging “recyclable.” However, the type of plastic used in its packaging is effectively not recycled. Amazon's claim of recyclability is an empty promise and will not reduce Amazon's plastic waste footprint or harmful impact on the oceans.

Amazon's plastic packaging – including mailers, bubble wrap, air pillows, and more – is referred to as “plastic film” in recycling terms and has little to no value on the recycling market. Most often, it is landfilled, burned, or pollutes the environment, including the oceans.

91% of U.S. residents have access to either curbside and/or drop-off recycling programs that accept packaging materials.⁴⁹ With very few exceptions, municipal recycling programs in the U.S., Canada, and the UK do not accept plastic film.⁵⁰

In February 2021, an industry report, “Addressing the Challenge of Film and Flexible Packaging Data,”⁵¹ was published by The Recycling Partnership (a group funded by many of the largest plastic polluters in the world). It listed the many data deficiencies and difficulties inherent in calculating the rate at which plastic film is currently recycled.

It concluded that the most comprehensive data source on plastic film recycling from households is included in a Film Recycling Investment Report, which was issued in 2017 by Closed Loop Partners about recycling in the U.S. That report estimates that only 4% of the polyethylene (PE) film,⁵² the plastic material that much of Amazon packaging is made of, is recovered for recycling.

The report comes to the conclusion that the average American household uses (or gets sent from e-commerce firms) 75 to 88 pounds of PE film per year – but that the national average rate of return-to-retail (the store drop-off program linked to by Amazon) is roughly 1.6 pounds per household per year – meaning less than 2% of plastic packaging is brought to the shops by consumers for store drop-off. Less than 6% of Amazon Prime customers surveyed by Oceana this summer (as described later in this report) said they bring their plastic packaging to store drop-off points.

Another industry report⁵³ lists challenges and barriers that clarify why the store drop-off program for recycling does not work. The authors explain that information from recyclers demonstrates that only supermarkets with quality controls in place for the returned plastic packaging and the ability to transport collected bags and wrap to their distribution centers for consolidation were able to find domestic buyers for consumer plastic recycling collected in store drop-off bins.

Jan Dell, Founder of the Last Beach Cleanup, points out that most of the plastic film being recycled is clear warehouse plastic used to wrap pallets, and not the plastic waste customers put in the plastic bag recycling bins. She notes, as an example, that the standards listed by Trek, a manufacturer of plastic decking and one of the main purchasers of recycled plastic film, make it unlikely that the plastic placed in the take back bins would meet these standards for this kind of use.⁵⁴

In 2019, Greenpeace performed a comprehensive survey⁵⁵ of plastic product waste collection, sorting, and reprocessing in the U.S. to determine the legitimacy of "recyclable" claims and labels on consumer plastic products. It found that plastic waste with codes 3, 4, 5, 6, and 7 – including the type of plastic that is used in Amazon packages – has negligible-to-negative value and is effectively a category of products that, even when collected by municipal recycling programs, are not recycled. Plastic waste with codes 3-7 collected by municipal systems throughout the U.S. is usually sent to landfills or is incinerated.

AMAZON'S RECYCLING CLAIMS

Amazon uses the term recycling more than 100 times in its 2020 sustainability report. And it claims in this report that it is,

*Minimizing waste, increasing recycling, and providing options for our customers to reuse, repair, and recycle their products. We are working to send less material to the landfill and more back into the circular economy loop.*⁵⁶

In some cases, the recycling noted – such as recycling or repurposing water or heat in the company's Amazon Web Services (AWS) data centers⁵⁷ – may potentially reduce the company's use of underlying resources or material in question. However, the recycling efforts mentioned regarding plastic packaging do not, according to Oceana's analysis, appear to add up to significant reductions in the company's massive plastic packaging waste footprint.

In its sustainability report Amazon describes its recycling projects but fails to provide evidence or data about how these projects would reduce the company's total plastic packaging footprint.

Amazon notes that it is, "Improving the composition of our plastic packaging solutions to use less material and incorporate more recycled content" and offers as an example that:

*We are increasing the recycled content of our plastic film bags from 25% to 50% in 2021, and from 15% to over 40% for our plastic padded bags. Together, these improvements are expected to eliminate more than 25,000 metric tons of new plastic each year.*⁵⁸

While Amazon does not define what it means by "new plastic," it is reasonable to assume it is purchasing plastic film and plastic padded bags made with more recycled content (to replace virgin or "new" plastic). Unfortunately, this additional recycled content does not impact the strong likelihood that the plastic bag is heading for the landfill, incinerator, or environment (and possibly the ocean). This is because plastic bags made from recycled plastic, just like those made from virgin plastic, are not accepted by municipal recycling facilities and generally are not recycled. Additionally, the company seems to be indicating that it will use a very large amount of plastic film and padded

bags in 2021 (conceivably as much as 100,000 metric tons or 220 million pounds – assuming that the plastic referenced is approximately equal to 25% of the total used).

The company also notes in its sustainability report that it is, “Partnering to improve recycling infrastructure.” One of these projects includes funding the “West Coast Contamination Initiative” which it states is, “Reducing the amount of non-recyclable material collected through local recycling systems.” This, it explains, includes common contaminants like plastic bags or plastic film.

The West Coast Contamination initiative, funded by Amazon and Keurig Dr. Pepper,⁵⁹ finds in a report⁶⁰ that, “Residents are not aware of what can be recycled curbside, even those who think they know how to recycle.” This report also finds that plastic bags (and plastic film) are the top “contaminants” identified by the cities and Materials Recovery Facilities (MRFs) or dumps.⁶¹ As this report demonstrates, the quickest way for Amazon to reduce contamination caused by plastic film is by committing to reduce or replace its plastic film packaging.

Amazon also writes in its sustainability report that it:

*Has developed a process for on-site plastic film recycling for our operations. In 2020, we began converting plastic film into poly bags made of 100% recycled material, which are used for package-free returns at Amazon drop-off locations in the U.S. After use, the bags are collected and returned to Amazon facilities where we again convert them into new poly bags, repeating the recycling process.*⁶²

And then notes that:

*As of June 2021, on-site plastic film recycling is available at more than 168 Amazon sites across North America and Europe.*⁶³

It appears that Amazon is recycling film used in its operations (not plastic film packaging received by customers), which could presumably include items like the plastic film used to wrap its pallets. This effort is an example where Amazon is effectively repurposing its plastic directly for its drop-off facilities, which is laudable but does not appear to reduce the amount of plastic packaging it sends to its customers. And, crucially, the impact on the company's plastic footprint is unclear, as Amazon is not detailing in its sustainability report how this initiative is tied to the company's overall use of plastic film or any commitments to reduce its overall use of plastic film.



9% of all plastic waste ever produced has been recycled and 91% has ended up in landfills, incinerators, or in the environment, including the oceans.



A machine sorts plastic waste. Plastic film, including the kind used by Amazon, can damage recycling machinery.

OCEANA RESEARCH: AMAZON RECYCLING CLAIMS AND PROGRAMS

- Amazon's customers do not know that their plastic packaging is not accepted by their local recycling programs
- Secret shoppers told that Amazon plastic is not accepted by Amazon's designated recycling drop-off points

In 2021, Oceana conducted a multi-part study in 25 cities in the U.S. and the UK to evaluate Amazon's customer-driven recycling program. Oceana surveyed 1,400 Amazon Prime customers in these 25 cities to determine what they do with their Amazon plastic packaging. Oceana also sent mystery shoppers into 186 stores in these same cities – identified as recycling drop-off points for plastic packaging through links on the Amazon Second Chance website. The shoppers interviewed store employees and managers to find out if they would accept plastic packaging from Amazon for recycling and if store personnel were aware that Amazon is directing its customers to their stores to recycle their plastic packaging.

SURVEY: AMAZON PRIME MEMBERS AND AMAZON'S PLASTIC PACKAGING

Amazon's plastic packaging is – as previously noted – a type of plastic known as plastic film –the “plastic shopping bag” category of plastic. Amazon writes on its sustainability website and report, that plastic film “Is a difficult material to process, and most municipal recycling programs do not accept it.”⁶⁴



Amazon Second Chance web page.

Amazon has created a program called “Amazon Second Chance” in the U.S. and the UK (<https://www.amazon.com/amsc>). Customers who visit the Second Chance website and click on images of plastic packaging (such as the blue and white 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 provides a link to find “your drop off location.”

When a customer clicks on the link, they are sent to plasticfilmrecycling.org (in the U.S.) or to “recyclenow.com”

(in the UK). In the U.S., they are informed that plastic film typically does not get recycled in curbside bins. Amazon customers who visit these sites are encouraged to instead use drop-off locations for their plastic packaging – the plastic bag bins in stores. In Canada, visitors who click the link from Amazon Second Chance to plastic film recycling are likely to only be shown addresses for drop-off locations in the U.S.

Of the 1,400 Amazon Prime customers surveyed by Oceana, only 5.9% said they place Amazon plastic packaging in the plastic drop-off bins in the stores linked to the Amazon Second Chance website. Nearly 75%, reported that they either put their Amazon plastic in curbside recycling bins (39.4%) or in the trash (35.5%) which, given that plastic film

put in a curbside recycling bin is largely landfilled means that 74.9% of the customers surveyed send – knowingly or not – their plastic packaging to the dump. Additionally, 19.3% say they "save their packaging" and later reuse it. Roughly 80% of the customers who said they put their Amazon packaging in the curbside recycling, reported that they did not know that their plastic would not be recycled. 70% of these customers reported that they were angry or surprised to find this out and 5% said they would consider canceling their Amazon Prime account because of this discovery (15% of the customers who reported shopping every day on the site said they would consider doing so). Nearly 95% of the Amazon customers surveyed are concerned about plastic pollution's impact on the oceans.

MYSTERY SHOPPER INVESTIGATION OF AMAZON RECYCLING DROP-OFF POINTS

The secret shoppers, hired by Oceana, who visited stores listed as participating in the plastic film recycling program used by Amazon reported that 41% of the stores visited would not accept Amazon plastic packaging and more than 80% of store managers were not familiar or did not know that Amazon was directing its customers to put plastic packaging in the plastic bag bins and were not certain how or what company took it away. The store managers who rejected Amazon plastic packaging made the following statements to the secret shoppers:



Plastic bag bin in store linked to by Amazon for disposal of Amazon plastic packaging, taken by a mystery shopper. Source: About Face

"The store has never recycled Amazon packaging," then added, "We only recycle plastic bags here."

"At the end of the shopping center is a shipping company, and they might be able to take care of you."

"There are some big recycling bins along the road you could look into placing your recycling into."

It's also worth noting that Amazon shoppers are being told to bring their packaging to stores and to find recycling bins that predominantly focus on plastic bags and in some cases discourage placing non plastic bags in the receptacle.

Additionally, secret shoppers reported seeing Amazon plastic packaging in only 17% of the 186 plastic bag bins inspected.

According to Oceana's research, Amazon's customers are highly concerned about plastic waste, very confused about what to do with the plastic packaging they receive from Amazon, and upset to learn that this plastic likely will not be recycled. And it seems likely that the customers who make a special trip to try and recycle their Amazon plastic packaging at the stores linked to by the company will be doubly frustrated based on Oceana's secret shopper research and the uncertainty about whether or not the plastic put in these bins will be recycled.

INTERVIEWS WITH WASTE MANAGEMENT AUTHORITIES ABOUT AMAZON PLASTIC

Oceana interviewed local public works departments across the U.S. and the UK about what they do with plastic film and Amazon packaging. Those interviewed reported that the soft plastic is difficult to handle, gets caught in the recycling machinery and that there is not a strong market for buying recycled residential film.

A public works department representative in Salem, Massachusetts, said that, "You can't put (any soft film plastic) in the curbside recycling bin and that's just because it will get tangled up in the machinery." Another representative in Overland Park, Kansas, said the, "We don't take film or polystyrene. Difficult to handle. Small market." In San Martin, California, the representative explained the situation with a touch more color: "Recycle centers are all rejecting the plastic because it ruins the machines. The material is ruining the machines and costs money so now they are rejecting it and sending it to landfills." A representative from Brixton, London's municipal recycling center, explained, "Everything in your green wheelie bin gets taken to a larger facility, but they do not accept plastic bags, ...and if there are any plastic bags in your wheelie, nothing inside can be recycled." Nine of 10 canvassed locations in the UK responded that plastic film is a non-recyclable material.

According to Oceana's research, **Amazon's customers are highly concerned about plastic waste, very confused about what to do with the plastic packaging they receive from Amazon, and upset to learn that this plastic likely will not be recycled.**





A garbage truck dumps waste into a landfill. 91% of all plastic ever created has been landfilled, burned, or entered the environment as pollution.

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HOW AMAZON IS REDUCING ITS PLASTIC PACKAGING FOOTPRINT

- Amazon has the solutions: it needs to implement them globally
- Amazon's elimination of single-use plastic packaging in India could be significantly reducing the company's plastic pollution footprint
- Amazon uses reusable packaging in select markets. It needs to do this everywhere
- Amazon developed plastic-free alternatives to replace single-use plastic packaging

AMAZON'S ELIMINATION OF SINGLE-USE PLASTIC PACKAGING IN INDIA AND GERMANY

Oceana's estimate of Amazon's plastic footprint was substantially impacted by the company's actions in India. Oceana assumed in its analysis, that Amazon has reduced its single-use plastic packaging waste by 50% in India, which cut its estimated global plastic packaging waste significantly. Unfortunately, Amazon has not publicly released data regarding its reduction of plastic packaging in India, and customer data (such as unboxing videos by Amazon customers in India) make it clear that some single-use plastic packaging is still in use.

As Amazon writes in its 2020 sustainability report:

In India, Amazon eliminated single-use, thin-film plastics in packaging in 2020 by replacing plastic materials like bubble wrap and air pillows with paper cushions and introducing plastic-free, biodegradable tape. To reduce the need for packaging at all, we have developed a model for packaging-free shipping across more than 100 Indian cities, delivering orders in their original packaging using protective containers that delivery drivers can reuse.⁶⁵

India's e-commerce market is forecast to have sales of \$61 billion in 2021, and market experts estimate this could more than double by 2025.⁶⁶ In June 2018, India's prime minister, Narendra Modi, and its central government pledged to ban single-use plastics by 2022.⁶⁷ But in October 2019, the ban was delayed.⁶⁸

Taking matters into his own hands, 16-year-old Delhi resident Aditya Dubey started a petition to stop Amazon and fellow Indian e-commerce giant Flipkart from using what the petition described as "excessive" plastic packaging in India⁶⁹ and, through his legal guardian, pleaded to the country's National Green Tribunal. The Tribunal then requested that the Indian Central Pollution Control Board take action, who in consequence informed Amazon that, in line with India's Extended Producer Responsibility for plastic waste, "Primary responsibility for collection of (...) packaging is of Producers, Importers, and Brand Owners who introduce the products in the market. They need to establish a system for collecting back the plastic waste generated due to their products."⁷⁰

Amazon innovated and quickly took steps to reduce its plastic use in India. Amazon announced that it would use paper cushions in India to replace plastic dunnage, such as air pillows and bubble wraps in outer boxes across all its fulfillment centers.⁷¹ It also unveiled a plan to expand the Packaging-Free Shipping program and later reported that 40% of its orders were being shipped in their original boxes⁷² and not repackaged by Amazon.

On June 29, 2020, Amazon announced it had achieved a 100% successful transition away from single-use plastics in India, less than a year after its declaration to act. Unfortunately, it qualified this claim by noting that it still uses some plastic in packaging material, which it claims are 100% recyclable through the available collection, segregation, and recycling channels.⁷³ In addition, Oceana's searches of unboxing videos uploaded in the past year found several examples of plastic packaging in the packages opened by Amazon customers in India.

Because the ban took effect in the second half of the year – Oceana assumed in its estimate that Amazon India's plastic packaging footprint has at best halved to what it would be if solely calculated by market share. The company needs to provide data about its progress in India, clarify its definition of single-use plastic packaging, and expand this effective solution for reducing its plastic packaging footprint to the rest of the countries where it operates.

In late November 2021, news accounts reported⁷⁴ that Amazon had pledged to cut its use of plastic packaging in Germany by the end of the year. Germany is one of the company's largest markets – the company has a reported 53% market share in the country and ships hundreds of millions of packages in Germany annually.⁷⁵ Amazon, in an operational note it shared with Oceana,⁷⁶ said it will switch from plastic to delivering in “flexible paper-based bags” and other plastic alternatives and said this switch will apply to items shipped by Amazon and those shipped by third-party providers through Amazon. Amazon's pledge to move away from single-use packaging in one of its largest markets shows it is possible to do this everywhere it operates around the world.



Amazon unboxing video published to YouTube on September 19, 2020 (note the Amazon.in logo on the top right). Source: Tech Buffett Samsung Galaxy M51 Unboxing - Amazon's First Sale Unit

AMAZON'S USE OF REUSABLE PACKAGING

Amazon in India is delivering food to customers in more than 300 cities⁷⁷ and has announced that it delivers 60% of Amazon Pantry orders in reusable tote bags⁷⁸ to reduce secondary packaging as of 2019. It is also using reusable crates to deliver individual shipments instead of plastic or corrugated boxes for delivery in Bangalore.⁷⁹ Additionally, in the U.S., some Amazon Fresh food orders have been delivered in reusable totes,⁸⁰ a solution that could be expanded to all other Amazon deliveries.

Coupang, the largest e-commerce company in South Korea, has dramatically expanded its use of reusable packaging with its Coupang Fresh business⁸¹ where customers can opt to use reusable eco bags that they return to their drivers. Coupang customers are also, according to the company, able to leave returns for the company's delivery persons to pick up outside their front doors (without boxes and labels).⁸²

Amazon has more than 200 million Prime customers around the world,⁸³ and in Oceana's recent survey of 1,400 Prime Members more than half reported shopping on Amazon several times a month.⁸⁴ These are repeat customers who can accept and return reusable packages. According to recent reports, Amazon itself delivered 4.2 billion packages or 21% of all deliveries in the U.S. (making it a larger shipper of parcels than FedEx).⁸⁵ Amazon can substantially increase its use of returnable packaging and significantly decrease its use of disposable single-use packaging.

PLASTIC-FREE ALTERNATIVES TO REPLACE SINGLE-USE PLASTIC PACKAGING

Amazon is a world leader in innovation and has already created several alternatives to single-use plastic packaging.

Amazon's lightweight padded paper mailer and other recent announcements

Amazon's packaging and materials lab has innovated and created a lightweight padded paper mailer. Amazon has previously reported that the paper mailer has been used hundreds of million of times.⁸⁶ This mailer is made from 100% paper and employs a form of glue as a cushioning material that is made from the same material as the glue used in cardboard boxes and therefore it can be recycled as paper.

In its 2020 sustainability report,⁸⁷ Amazon states, "We are expanding our use of paper padded mailers across North America to replace the use of mixed paper and plastic mailers by the end of 2022." Mixed paper and plastic mailers refer to paper envelopes with interior plastic padding. It is unclear what this means in terms of reducing the company's plastic footprint (given the company's lack of transparency) but considering Amazon's recent dramatic increase in the use of mailers,⁸⁸ this is seemingly a significant step. Amazon should share details about the new mailer's impact on plastic waste reduction and continue to aggressively replace plastic mailers with other viable alternatives. It should also use recycled paper to produce these mailers. Unfortunately, in testimony to the California Recycling Commission, Amazon representatives stated that it is not using recycled paper to produce this mailer because "Too much recycled content might compromise the integrity of that paper and its ability to not tear during the fulfillment process."⁸⁹

Amazon has recently announced further steps towards plastics reduction by replacing plastic pouches with paper envelopes in France⁹⁰ and better recyclable paper packaging for groceries in the U.S.^{91,92} But even without a plastic outside, items in France may still be packaged with plastic bubble wrap or cushions as protective covers. And while certainly a step in the right direction, the reported plastic reduction in the U.S. would likely not even amount to 0.2% of Amazon's global plastic footprint as estimated by Oceana.

Frustration-Free Packaging

Amazon's main packaging initiative is its long standing "Frustration-Free Packaging"⁹³ program. This effort is focused on reducing packaging by volume and weight. Amazon works with sellers who come up with packages specifically designed for Amazon (that use less material including plastic. This approach avoids shipping packaging designed for retail (and not for shipping). In its sustainability report,⁹⁴ Amazon cites working with P&G in creating "the Tide Eco-Box" which it states uses 60% less plastic compared to the package it replaced.⁹⁵

With "Frustration-Free Packaging", vendors can choose to certify their packaging as "no [Amazon] over box required," meaning the products ship only in their original packaging or with an over box directly from the vendor.⁹⁶

Amazon wrote, in its 2020 sustainability report that as of June 2021, more than 2 million products qualified under its Frustration-Free Packaging program.⁹⁷ But, no data is also provided about the amount of plastic packaging this effort eliminates (or what percent of Amazon sales this figure represents). So, while this approach eliminates plastic, it is unclear what specific impact this program has on reducing Amazon's plastic footprint. Amazon should continue to expand this program and be transparent about its impact on reducing plastic packaging.



Amazon-packages out for delivery. Amazon is now the largest retailer in the world, outside of China.
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STAKEHOLDERS DEMAND FOR PLASTIC-FREE PACKAGING

- Amazon customers want plastic-free packaging
- Amazon's shareholders are calling on the company to take action on its plastic problem

Amazon's first leadership principle is customer obsession,⁹⁸ and top company executives are regularly quoted in the press about the company's relentless and guiding focus on pleasing those who buy from Amazon.⁹⁹ Its mission is to "be Earth's most customer-centric company."¹⁰⁰ Based on this principle, it should take immediate action to offer customers plastic-free packaging as an option at checkout.

Public opinion research sponsored by Oceana¹⁰¹ in 2020 found that Amazon customers are overwhelmingly concerned about plastic pollution and its impact on the oceans and want Amazon (and other major online retailers) to give them plastic-free packaging choices. Oceana supporter Nicole Delma created a Change.org/PlasticFreeChoice petition to ask Amazon for plastic-free options at checkout. By the end of November 2021, more than 741,000 people have already added their names to the petition.¹⁰²

At Amazon's 2021 annual general meeting (AGM), 35.5%¹⁰³ of its shareholders voted for a resolution to require the e-commerce giant to issue a report by year-end quantifying its use of single-use plastics and providing recommendations for how to reduce its plastic footprint. The resolution was presented by Conrad MacKerron, Senior Vice President of As You Sow and filed by As You Sow along with Green Century. Support for the resolution, which was expected to be defeated at this initial meeting, exceeded expectations. It received the second most "yes" votes of any of the 14 shareholder resolutions considered at the company's 2021 AGM.



concoction
chocolate

juicer
pesto sauce
cheeseburger
ahi tuna
bananas

amazonfresh
ice cream
flowers

olive oil
toothpaste
sausage

diapers
key lime pie
football
dog food
avocado

amazonfresh
hair spray
fresh pasta

PLASTIC PACKAGING, FOSSIL FUELS, AND CLIMATE CHANGE

- Amazon has ambitious climate targets
- E-commerce plastic packaging is made from fossil fuels

Amazon's Director of Customer Packaging Experience has written that flexible packaging, which is often made of plastic (such as plastic bags, mailers, and folders), "Uses less material than similar-sized boxes, weighs less, and conforms around the product, taking up less space than a box during shipping. That means flexible packaging makes it possible to pack more orders in each load, resulting in fewer trips, less fuel burned, and a smaller carbon footprint."¹⁰⁴

Plastic film packaging, including the kind used by Amazon, is made from fossil fuels, as much as 90% according to some estimates, with 4% to 8% of the world's current oil production used to make plastics.¹⁰⁵ Plastics are also made from natural gas by-products (ethane and propane) and even coal is reportedly being used to make plastic in China.¹⁰⁶ The future of emissions coming from fossil fuels is increasingly tied to the future production of petrochemicals and plastics. For example, a recent study of the impact of the planned large growth of infrastructure of oil and gas in the Gulf and Southwest in the U.S. forecast that this expansion could generate an additional 541 million tons of carbon dioxide (CO₂) – equivalent to more than 8% of total greenhouse gas emissions in the U.S. in 2017.

The authors estimated that 38% of these emissions could come from petrochemical plants¹⁰⁷ – the kind where the feedstocks for plastic packaging and other plastic items are produced.

Despite the clear connection of plastics to fossil fuels, Amazon appears to be justifying its push to lightweight packaging and plastics as part of an effort to reduce its carbon footprint.¹⁰⁸ For several years, its employees, customers, and investors, along with non-governmental organizations, have been urging Amazon to provide transparency about its carbon footprint and for action to reduce its CO₂ emissions.¹⁰⁹ It launched its first sustainability website in 2019¹¹⁰ and co-founded the Climate Pledge¹¹¹ the same year – a commitment to be net-zero carbon across its business by 2040.¹¹² In its 2020 sustainability report, Amazon revealed that its carbon emissions increased by 19% in 2020 (up from 15% in 2019).^{113,114} It's unclear how Amazon factors in plastics, which are made from fossil fuels, into its carbon calculations and if the company is considering the full life cycle of plastic, which according to recent reports could generate almost 5 metric tons of CO₂ for every ton of plastic if emissions from oil and gas production to the end-of-life are included.¹¹⁵

Life cycle assessments (LCAs) that favor plastic often do not fully consider their full environmental impact.¹¹⁶ Emissions caused by plastic after it has been thrown away are frequently left out of LCAs. A recent report found that CO₂ emissions from the disposal of plastic through the open burning of plastic waste from Coca-Cola were as high as three-quarters of its global transport and distribution emissions.¹¹⁷ Burning, especially open burning in low and middle-income countries, is particularly concerning since plastic is made from fossil fuels.¹¹⁸ Other reports have



Amazon plastic packaging. Oceana estimates that Amazon generated 599 million pounds of plastic packaging waste in 2020.

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suggested that plastic left in the environment gradually emits methane and ethylene potent greenhouse gasses, as it breaks up, further increasing plastic's carbon emissions footprint.¹¹⁹

A life cycle assessment of protective mailers published by the University of Calgary analyzed the comparative strengths and weaknesses of plastic and paper packaging in terms of the climate and environment.¹²⁰ It found that none of the plastic mailers could be recycled, which resulted in them being landfilled. Cardboard mailers, on the other hand, were recycled, landfilled, or composted. The study also found that paper mailers produced half the emissions of plastic mailers on a per weight basis. According to the study, the key is to create lighter-weight paper alternatives to plastic. In general, changing from plastic mailers to lightweight paper mailers has positive effects on the environment.

Companies like Amazon can reduce plastic use and address climate change by finding alternative ways of delivering products without single-use packaging. Amazon is one of the most innovative companies on the planet and has already developed, as discussed previously in this report, non-plastic lightweight materials. It must also create systems that discourage the use of single-use plastic packaging.

Despite the clear connection of plastics to fossil fuels, Amazon appears to be justifying its push to lightweight packaging and plastics as part of an effort to reduce its carbon footprint. For several years, its employees, customers, and investors, along with non-governmental organizations, have been urging Amazon to provide transparency about its carbon footprint and for action to reduce its CO₂ emissions.

PLASTIC AND THE OCEANS

- Plastic is a major source of pollution for the world's oceans. Scientists now estimate billions of pounds of plastic wash into the ocean every year
- The plastics industry expects annual production will more than triple by 2050, far outpacing recycling (only 9% of all plastic waste produced to date has been recycled)
- Studies have estimated that 55% percent of sea birds, 70% of marine mammals, and 100% of sea turtles have ingested or become entangled in plastic and have found that plastic film or bags are deadliest to marine life

Plastic packaging waste is blown into rivers or the sea from landfills, floats in through storm drains, or is dumped or burned close to the shore in countries with poor or non-existent waste management systems.¹²¹ In addition to needing to dispose of their waste, some of these countries must also contend with imported plastic packaging waste shipped from countries like the UK, the U.S., and Canada.¹²²

Peer-reviewed scientific studies have estimated that 15 million tons (33 billion pounds) of plastic wash into the ocean every year.¹²³ This is roughly equivalent to dumping two garbage trucks full of plastic into the oceans every minute.

Plastic is everywhere in our oceans: floating on the surface, scattered across beaches and coastlines, and mostly hidden on the seafloor¹²⁴ where it accumulates in underwater structures like seamounts, canyons, and escarpments.¹²⁵ Plastic debris has been found washing up on the world's most remote coastlines, melting out of Arctic sea ice, and sitting at the deepest point of the ocean floor. As plastic continues to flood into our oceans, the list of marine species affected by plastic debris expands.

Studies have found that plastic pollution is dramatically impacting life in the oceans. A recent review found that more than 900 species have ingested or become entangled in plastic, from zooplankton at the bottom of the ocean food web to seabirds at the top of it, including 55% percent of sea birds, 70% of marine mammals, and 100% of sea turtle species studied.¹²⁶ Sea turtles and other animals can mistake plastic bags, like the ones used by Amazon, for jellyfish or algae – their typical food.

Research shows that sea turtles can even mistake the smell of plastic for food, often leading to a deadly outcome.¹²⁷ In fact, researchers have identified plastic film as the deadliest form of plastic pollution when large marine animals interact with it.¹²⁸ In a recent study, Oceana found evidence of nearly 1,800 animals from 40 different species swallowing or becoming entangled in plastic since 2009 in the U.S. Of those, a staggering 88% of the animals were from species listed as endangered or threatened with extinction under the *Endangered Species Act*.¹²⁹

Plastic essentially never biodegrades. Instead, once it reaches the oceans, it breaks up into smaller and smaller pieces, ultimately becoming microplastics that attract and harbor harmful chemical pollutants. When eaten by fish and shellfish, some of the contaminants attached to microplastics work their way into our food supply.^{130,131,132} Everything from salt to honey to beer has been found to contain microplastics.¹³³ Scientists are still studying how humans might be affected by the plastics that are making their way into our food, water, and air.



CONCLUSION AND RECOMMENDATIONS

Amazon's plastic problem is growing. Oceana estimates that its plastic packaging waste in 2020 totaled 599 million pounds, an increase of 29% in comparison to Oceana's 2019 estimate of 465 million pounds (211 million kg). This amount of plastic would, in the form of air pillows, circle the planet more than 600 times. Oceana also found, based on data from a peer-reviewed study on plastic waste pollution published in *Science* in 2020, that up to 23.5 million pounds of this plastic waste entered the world's waterways and seas, an increase of 7% compared to Oceana's 2019 estimate of 22 million pounds. That is equivalent to dumping a delivery van's payload of plastic into the oceans every 67 minutes.

To stop inundating the world and the oceans with plastic, Amazon must focus on reduction and reuse and stop promoting false, unproven, and ineffective solutions for reducing plastic packaging film waste including recycling. As Oceana's survey of Amazon Prime customers, Local Municipal Waste Officials, and stores linked to by Amazon Second Chance website (and drop-off locations for the company's plastic packaging) found, Amazon recycling efforts do not add up to and will not significantly reduce its enormous (and growing) plastic footprint.

Amazon's customers are concerned about the impact of plastics on the ocean and are rightfully confused about what to do with the plastic packaging they receive. Plastic film waste has low recycling rates, is downcycled (and not, generally, repurposed as plastic packaging), and contaminates other forms of recyclable plastic (as the material damages the machines used to sort recycling). There is little to no evidence of recycling of consumer plastic film (and packaging) on a large scale and, most importantly, essentially no evidence that this recycling reduces the amount of plastic packaging waste entering landfills and the environment (and the world's oceans). Instead, Amazon needs to focus on expanding proven plastic reduction efforts in India and elsewhere on a global basis.

According to Oceana's analysis, Amazon's recent commitment to ban single-use plastic packaging in India can – if properly implemented and quantified worldwide – significantly reduce its plastic packaging footprint and contribution to marine plastic pollution. Amazon has replaced its packaging in India and increased its use of reusable packages. Unfortunately, Amazon has not publicly released data regarding its reduction of plastic packaging in India, and customer data (such as unboxing videos by Amazon customers in India) make it clear that some single-use plastic packaging is still in use. Amazon's recent announcement that it will move away from single-use plastic packaging in Germany, one of the company's largest markets, further demonstrates that the company can do this – they can move away from single-use plastic packaging on a worldwide basis.

Plastic in the ocean is having a severe impact on marine life, biodiversity, and the functioning of ocean ecosystems. Unfortunately, recent analyses and scientific reports estimate an exponential increase in plastic packaging and a growth in plastic pollution. Large companies like Amazon must take immediate steps to reduce their use of plastic and support governments to enact meaningful reduction measures rather than simply talking about recycling. There is ample evidence showing that recycling, especially in the case of plastic film, is not happening at significant rates and will not help to meaningfully reduce marine plastic pollution.

Amazon's recent commitment to reduce its climate footprint is laudable and it should make a similar commitment to reduce its plastic footprint, rather than expand it under a misguided view that the issues are not intertwined. Because of its proven ability to innovate, Amazon has already shown that it can create plastic-free packaging that helps achieve both commitments, and that it can also quickly change its practices, as it has done in India, and has reportedly pledged to do in Germany. By expanding programs like Ships in Own Container or Packaging Free Shipping, for example, which Amazon claims represent 40% of shipments in India, it can efficiently and quickly reduce plastic and save money in the process.

Amazon says it is a customer-obsessed company.¹³⁴ Simply searching for the phrase “Amazon plastic-free packaging” on an internet search engine will pull up multiple pages highlighting advice by customers calling on Amazon to offer plastic-free alternatives. Oceana has also confirmed Amazon customers’ overwhelming desire for plastic-free packaging options – 76% of its most loyal and important customers (Prime members) reported that they would click on a “plastic-free packaging” option at checkout if offered. More than 741,000 people have also petitioned Amazon to offer plastic-free choices.¹³⁵ These individuals want to continue to shop at Amazon, particularly in the wake of the COVID-19 pandemic. Amazon can take steps to meet this growing demand and owes it to the planet and the oceans to do so. As former Amazon manager Rachel Johnson Greer notes, “the company can do this, it is a matter of will.”

RECOMMENDATIONS

To tackle its growing plastic problem, Amazon must:



LISTEN TO ITS CUSTOMERS:

As an immediate measure, give its customers what they want and offer a plastic-free packaging option at checkout.



INNOVATE TO REDUCE AND REUSE:

- Aggressively scale up programs to minimize packaging, which has big potential to cut plastic packaging, without increasing other types of packaging or its carbon footprint.
- Increase the use of reusable containers for shipping purchases.
- Adapt its “flexible” packaging standards to incentivize, if product covering is still needed, non-plastic packaging from 100% recycled materials and to disincentivize plastic packaging.



BE TRANSPARENT AND ACCOUNTABLE:

- Regularly report on its plastic footprint, including the amount and type of plastic Amazon, its vendors, and marketplace sellers use by country and company-wide, and independently verify this data.
- Consider the complete environmental impact of its plastic use, and specifically its impact on the environment, the oceans, and climate, when undertaking company-wide environmental analyses, sustainability reports, and high-level decisions.

END NOTES

- ¹The circumference of the earth is 1,577,727,360 inches (see: <https://bit.ly/3k6NiNb>). According to Uline, a roll of 4,255 8 x 4 plastic pillows weighs 9.3 pounds or 458 air pillows per pound (see: <https://bit.ly/3etejsY>) Translating Amazon's total estimated plastic packaging use of 591 million pounds into 8x4 air pillows totals 270,398,387,097 air pillows or enough to wrap around the planet, at a length of 4 inches, 686 times.
- ²This estimate is based on an assumed payload of 3,000 pounds based on a survey of different delivery vans (see: <https://bit.ly/367o4sH>, <https://bit.ly/3kYoyYH>, and <https://bit.ly/3p2dlTV>)
- ³Amazon: Amazon India successfully eliminates 100% single-use plastic in packaging across its Fulfilment Centers (2020.06.29). Available: <https://blog.aboutamazon.in/sustainability/amazon-india-successfully-eliminates-100-single-use-plastic-in-packaging-across-its-fulfilment-centers#:~:text=Sustainability-,Amazon%20India%20successfully%20eliminates%20100%25%20single%20Duse%20plastic%20in%20packaging,an%20environmentally%20sustainable%20supply%20chain>. Accessed: 2021-10-07
- ⁴Handelsblatt Today, "Amazon Germany: Signed, Sealed and Also Delivered" Available: <https://www.handelsblatt.com/english/companies/amazon-germany-signed-sealed-and-also-delivered/23536464.html?ticket=ST-244717-TNCJoL57bOExqcypQ3Kk-cas01.example.org> Accessed 2021 12 01
- ⁵IFH Köln: Online Monitor 2021. 2021-06-23 [accessed on 2021-08-09] ; URL: https://einzelhandel.de/index.php?option=com_attachments&task=download&id=10572. p24
- ⁶New York Times: Amazon Walmart (2021.08.17). Available at <https://www.nytimes.com/2021/08/17/technology/amazon-walmart.html>. Accessed: 2021-10-07
- ⁷Amazon: Sustainability Report (2020). Available: <https://sustainability.aboutamazon.com/about/report-builder> . Accessed: 2021-10-07
- ⁸BORRELLE SB, RINGMA J, ET AL.: *Predicted growth in plastic waste exceeds efforts to mitigate plastic pollution*. Science.; 369(6510); S: 1515–8 (2020-09-18); Available: <https://science.sciencemag.org/content/369/6510/1515> Accessed: 2021-07-29
- ⁹This estimate is based on an assumed payload of 3,000 pounds based on a survey of different delivery vans (see: <https://bit.ly/367o4sH>, <https://bit.ly/3kYoyYH>, and <https://bit.ly/3p2dlTV>)
- ¹⁰Forrest A, Giacomazzi L, Dunlop S et.al Eliminating Plastic Pollution: How a Voluntary Contribution From Industry Will Drive the Circular Plastics Economy, *Frontiers in Marine Science* 6 (2019), 627. Available: <https://www.frontiersin.org/articles/10.3389/fmars.2019.00627/full>. Accessed: 2021-10-07
- ¹¹Geyer R, Jambeck J and Law K (2017) Production, use, and fate of all plastics ever made. *Science Advances* 19 Jul 2017: Vol. 3, no. 7, e1700782. DOI: 10.1126/sciadv.17007823. Available: <https://advances.sciencemag.org/content/3/7/e1700782>. Accessed: 2021-07-29
- ¹²Plastics Europe, Association of Plastics Manufacturers. Available: <https://plasticseurope.org/knowledge-hub/plastics-the-facts-2020/>
- ¹³Kühn S and van Franeker JA (2020) Quantitative overview of marine debris ingested by marine megafauna. *Marine Pollution Bulletin* 151: 0858. doi: 10.1016/j.marpolbul.2019.110858. Accessed: 2021-10-07
- ¹⁴Roman L, Schuyler Q, Wilcox C and Hardesty BD (2020) Plastic pollution is killing marine megafauna, but how do we prioritize policies to reduce mortality? *Conservation Letters* doi: 10.1111/conl.12781. Accessed: 2021-10-07
- ¹⁵Plastics Markets: Plastic Bag and Film Recycling Report (2020.08.20). Available: https://www.plasticmarkets.org/jsfcontent/FilmReport18_jsf_1.pdf - page 11. Accessed: 2021-10-07
- ¹⁶Karine Vann: The unfulfilled promises of plastic, *Waste Dive* (2021). Available: <https://www.wastedive.com/news/plastic-film-bag-takeback-chemical-recycling-coronavirus/592503/> . Accessed: 2021-10-07
- ¹⁷Amazon: Sustainability report, 'Further and Faster Together' (2020). Available: <https://sustainability.aboutamazon.com/pdfBuilderDownload?name=amazon-sustainability-2020-report> – page 44, 45, 46, 47 Accessed: 2021-10-07
- ¹⁸Kayla Fenton Principal Product Manager, Customer Experience Packaging, Amazon Testimony Before Recycling Committee of the Statewide Commission on Recycling Markets and Curbside Recycling (California), 11/13/21. Webcast recording (17:36 to 1:04)
- ¹⁹Amazon: Second Chance: :Recycle Packaging. Available: <https://www.amazon.com/amsc/category/recyclePackaging> Accessed: 2021-10-07
- ²⁰Deutsche Welle. Germany: Amazon pledges to cut use of plastic packaging. Available: <https://www.dw.com/en/germany-amazon-pledges-to-cut-use-of-plastic-packaging/a-59904175>, Accessed: 2021-12-01
- ²¹IFH KÖLN: Online Monitor 2021. (2021-06-23); Available: https://einzelhandel.de/index.php?option=com_attachments&task=download&id=10572 Accessed: 2021-08-09
- ²²Oceana: Release, 35,5% of Amazon Shareholders Call on Company to Report on Plastic Footprint. Available: <https://oceana.org/press-center/press-releases/355-amazon-shareholders-call-company-report-plastic-footprint> . Accessed: 2021-10-07
- ²³Oberlo: Online Shopping Statistics. Available: <https://www.oberlo.com/blog/online-shopping-statistics> or <https://www.oberlo.com/statistics/how-many-people-shop-online>, because of the reported massive growth of online shoppers due to the pandemic, see e.g. <https://blog.weglot>.

[com/top-global-ecommerce-stats-from-2020/](#); this figure may underestimate the number of shoppers. Accessed: 2021-10-07

²⁴Media: EL CEO: Mercado Libre y Amazon son los reyes del comercio electrónico con entregas de un día. (2021-06-22); Available: <https://elceo.com/negocios/mercado-libre-amazon-entregas-un-dia/> Accessed: 2021-08-06

²⁵LABS Português: Por que a Amazon ainda não é tão gigante no Brasil quanto pode ser. (2021-03-22); Available: <https://labsnews.com/pt-br/artigos/ecommerce/por-que-a-amazon-ainda-nao-e-gigante-no-brasil/> Accessed: 2021-08-10

²⁶Mishra, Digbijay: Exclusive: Flipkart in line for a 50% rise in its annualised GMV at \$23 billion. The Economic Times. (2021-09-13); Available: <https://economictimes.indiatimes.com/tech/technology/exclusive-flipkart-in-line-for-a-50-rise-in-its-annualised-gmv-at-23-billion/articleshow/86148462.cms> Accessed: 2021-10-12

²⁷Mordor Intelligence: Global E-Commerce Plastic Packaging Market (2021-2026) (2021-07-30). Available: <https://www.mordorintelligence.com/industry-reports/e-commerce-plastic-packaging-market>. Accessed: 2021-10-07

²⁸Statista: Number of digital buyers worldwide from 2014 to 2021 (2021-10-13), Available: <https://www.statista.com/statistics/251666/number-of-digital-buyers-worldwide/> Accessed: 2021-11-01

²⁹eMarketer: Retail E-Commerce Sales Worldwide 2019-2024 (2020-12). Available: <https://www.emarketer.com/chart/242908/retail-ecommerce-sales-worldwide-2019-2024-trillions-change-of-total-retail-sales>. Accessed: 2021-10-07

³⁰Smithers (2018) Sustainable Packaging Market Innovations & Trends, p25. Summary available: <https://www.smithers.com/services/market-reports/packaging/sustainable-e-commerce-packaging-to-2023>. Accessed Sep 20, 2020.

³¹Businesswire, Global Ecommerce Plastic Packaging Market. Accessible: <https://www.businesswire.com/news/home/20200724005327/en/Global-E-commerce-Plastic-Packaging-Market-2020-to-2025---Growth-Trends-and-Forecasts---ResearchAndMarkets.com> . Accessed: 2021-10-07

³²Mordor Intelligence: Global E-Commerce Plastic Packaging Market (2021-2026), <https://www.mordorintelligence.com/industry-reports/e-commerce-packaging-market>. Accessed: 2021-10-21

³³Ibid.

³⁴ECOMMERCEDB.COM: eCommerce Market Insights and Top Rankings. Available: <http://ecommercedb.com/en/markets?q=%2Fen%2Fmarkets%2F> Accessed: 2021-10-14

³⁵LABS PORTUGUÊS: Por que a Amazon ainda não é tão gigante no Brasil quanto pode ser. (2021-03-22); Available: <https://labsnews.com/pt-br/artigos/ecommerce/por-que-a-amazon-ainda-nao-e-gigante-no-brasil/> Accessed: 2021-08-10

³⁶MORDOR INTELLIGENCE: E Commerce Packaging Market Size, Growth | Industry Trends 2021 to 2026. Available: <https://www.mordorintelligence.com/industry-reports/e-commerce-packaging-market>. Accessed: 2021-07-29

³⁷IFH KÖLN: Online Monitor 2021. (2021-06-23); Available: https://einzelhandel.de/index.php?option=com_attachments&task=download&id=10572. Accessed: 2021-08-09

³⁸Smriti Chaudhary: A Whooping \$7 Billion On-Stake In India As Amazon Takes On Walmart-Owned Flipkart. Eurasian Time. (2020-10-19); Available: <https://eurasianimes.com/a-whooping-7-billion-on-stake-in-india-as-amazon-takes-on-walmart-owned-flipkart/>. Accessed: 2021-08-10

³⁹HENSEL A: Rakuten ramps up logistical investments in Japan to fend off Amazon. Modern Retail. (2021-05-12); Available: <https://www.modernretail.co/retailers/rakuten-ramps-up-logistical-investments-in-japan-to-fend-off-amazon/> Accessed: 2021-08-18

⁴⁰BECERRA M JE: Ecommerce: Walmart le pisa los talones a Amazon y Mercado Libre en e-commerce. América Retail. (2021-06-29); Available: <https://www.america-retail.com/ecommerce/ecommerce-walmart-le-pisa-los-talones-a-amazon-y-mercado-libre-en-e-commerce/> Accessed: 2021-08-10

⁴¹TANDEMUP: Estudio Marketplaces 2021. (2021); Available <https://tandemup.net/wp-content/uploads/2021/05/tandemup-estudio-anual-marketplaces-2021.pdf>. Accessed: 2021-10-13

⁴²VÉLIZ D: Amazon lidera la transición a la economía digital con su modelo de marketplace. Marketing 4 Ecommerce. (2021-09-22); Available: <https://marketing4ecommerce.net/amazon-lidera-la-transicion-a-la-economia-digital-con-su-modelo-de-marketplace/>. Accessed: 2021-10-13

⁴³SKELDON P: Amazon set to become UK's largest GMV retailer by 2025 as online grocery grows. InternetRetailing. (2021-06-02); Available: <https://internetretailing.net/industry/industry/amazon-set-to-become-uks-largest-gmv-retailer-by-2025-as-online-grocery-grows-23245> Accessed: 2021-10-12

⁴⁴INSIDER INTELLIGENCE: Amazon Remains the Undisputed No. 1. Available: <https://www.emarketer.com/content/amazon-remains-the-undisputed-no-1> Accessed: 2021-08-12

⁴⁵BORRELLE SB, RINGMA J, ET AL.: Predicted growth in plastic waste exceeds efforts to mitigate plastic pollution. Science.; 369(6510); S: 1515-8 (2020-09-18); Available: <https://science.sciencemag.org/content/369/6510/1515>. Accessed: 2021-07-29

⁴⁶This methodology is based on the assumption that the rate of Amazon's plastic packaging waste polluting aquatic ecosystems is as high as the general rate in any given country.

⁴⁷This global average rises over time as the use of plastic grows much faster than the deployment of adequate treatment facilities in most countries. Oceana's also assumed that the median value of the global average is appropriate for other countries where Amazon operates which we do have the highest plastic-waste-to-ocean ratios.

⁴⁸Geyer R, Jambeck JR, et al.: Production, use, and fate of all plastics ever made. Science Advances 3(7) (2017-07-01) Available: <https://advances.sciencemag.org/content/3/7/e1700782>. Accessed: 2021-07-29

⁴⁹Sustainable Packaging. Centralized study on availability of recycling. Available: <https://sustainablepackaging.org/wp-content/uploads/2021/09/2020-21-Centralized-Study-on-Availability-of-Recycling-SPC-7-2021-1.pdf> - page 6. Accessed: 2021-10-07

- ⁵⁰Amazon: Sustainability Report (2020). Available: <https://sustainability.aboutamazon.com/pdfBuilderDownload?name=amazon-sustainability-2020-report>. Accessed: 2021-10-07
- ⁵¹Recycling Partnership, Report : Addressing the challenge of film and flexible packaging data (2021). Available: https://recyclingpartnership.org/wp-content/uploads/dlm_uploads/2021/04/FF_Whitepaper_final.pdf. Accessed: 2021-10-07
- ⁵²Ibid.
- ⁵³Plastics Markets, More Recycling / American Chemistry Council: 2018 National Post-Consumer Plastic Bag & Film Recycling Report (2020-08) Available: https://www.plasticsmarkets.org/jsfcontent/FilmReport18_jsf_1.pdf Accessed: 2021.09.16
- ⁵⁴Waste Dive, The unfulfilled promises of plastic film recycling (2021). Available: <https://www.wastedive.com/news/plastic-film-bag-takeback-chemical-recycling-coronavirus/592503/>. Accessed: 2021-10-07
- ⁵⁵Comprehensive U.S. Survey of Plastics Recyclability. Greenpeace. Available: <https://www.greenpeace.org/usa/wp-content/uploads/2020/02/Greenpeace-Report-Circular-Claims-Fall-Flat.pdf>. Accessed: 2020.09.20.
- ⁵⁶Amazon: Sustainability report, 'Further and Faster Together' (2020). Available: <https://sustainability.aboutamazon.com/pdfBuilderDownload?name=amazon-sustainability-2020-report> – page 44, Accessed: 2021-10-07
- ⁵⁷Amazon: Sustainability report, 'Further and Faster Together' (2020). Available: <https://sustainability.aboutamazon.com/pdfBuilderDownload?name=amazon-sustainability-2020-report> – page 40, Accessed: 2021-10-07
- ⁵⁸Amazon: Sustainability report, 'Further and Faster Together' (2020). Available: <https://sustainability.aboutamazon.com/pdfBuilderDownload?name=amazon-sustainability-2020-report> – page 46, Accessed: 2021-10-07
- ⁵⁹The Recycling Partnership: Press Release: The Recycling Partnership Launches West Coast Contamination Initiative with First \$1 Million Donation (2019-04-09) Available: <https://recyclingpartnership.org/press-release-the-recycling-partnership-launches-west-coast-contamination-initiative-with-first-1-million-donation/> Accessed: 2021-10-07
- ⁶⁰The Recycling Partnership: 2019 West Coast Contamination Initiative Research Report (2020-04) Available: http://recyclingpartnership.org/wp-content/uploads/2020/04/The-Recycling-Partnership_WCCI-Report_April-2020_Final.pdf Accessed: 2021-10-07
- ⁶¹Ibid
- ⁶²Amazon: Sustainability report, Circular Economy (2020). Available: <https://sustainability.aboutamazon.com/environment/circular-economy/recycling>. Accessed: 2021-10-07
- ⁶³Ibid
- ⁶⁴Amazon: Sustainability report, 'Further and Faster Together' (2020). Available: <https://sustainability.aboutamazon.com/pdfBuilderDownload?name=amazon-sustainability-2020-report> – page 47, Accessed: 2021-10-07
- ⁶⁵Amazon: Sustainability report, 'Further and Faster Together' (2020). Available: <https://sustainability.aboutamazon.com/pdfBuilderDownload?name=amazon-sustainability-2020-report> – page 46, Accessed: 2021-10-07
- ⁶⁶Global Data: Indian ecommerce market to reach \$120bn in 2025 (2021). Available: <https://www.globaldata.com/indian-e-commerce-market-reach-us120bn-2025-says-globaldata/> , Accessed: 2021-10-07
- ⁶⁷UN Environment: India sets the pace in global race to beat plastic pollution. UN Environment Programme. Available: <https://www.unenvironment.org/news-and-stories/press-release/india-sets-pace-global-race-beat-plastic-pollution>. Accessed 2020.09.20
- ⁶⁸Dasgupta N (2019) India shelves plan on countrywide ban on single-use plastic products. Reuters Media. 01 October 2019. Available: <https://www.reuters.com/article/us-india-pollution-plastic-idUSKBN1WG43W>. As of September 2020, the Indian government has not said when the ban will come into force. Accessed: 2020.09.20.
- ⁶⁹Mishra D (2019) 16-year-old files petition over excessive plastic use by Amazon, Flipkart. Times Of India, 16 October 2019. Available: <https://timesofindia.indiatimes.com/business/india-business/16-year-old-files-petition-over-excessive-plastic-use-by-amazon-flipkart/articleshow/71608215.cms>. Accessed: 2020.09.20
- ⁷⁰Green Tribunal: Action Taken Report in the matter of O.A No. 997/2019, titled as Aditya Dubey (Minor) Vs. Amazon retail India (Private Limited) & Ors. and O.A No. 28/2020, titled as Aditya Dubey (Minor) through his Legal Guardian Mrs. Anu Dubey & Anr. Vs. Coca-Cola India Pvt. Ltd. (CC IPL) & Ors. in compliance to Hon'ble NGT order dated 18.06.2020. Available [https://greentribunal.gov.in/sites/default/files/news_updates/REPORT BY CPCB IN OA NO. 997 of 2019 and 28 of 2020 \(Aditya Dubey \(Minor\) Vs. Amazon retail India \(Private Limited\) & Ors. Vs. Coca-Cola India Pvt. Ltd. \(CC IPL\) & Ors.\).pdf](https://greentribunal.gov.in/sites/default/files/news_updates/REPORT%20BY%20CPCB%20IN%20OA%20NO.%20997%20of%202019%20and%2028%20of%202020%20(Aditya%20Dubey%20Minor)%20Vs.%20Amazon%20retail%20India%20(Private%20Limited)%20&%20Ors.%20Vs.%20Coca-Cola%20India%20Pvt.%20Ltd.%20(CC%20IPL)%20&%20Ors.).pdf). Accessed: 2021-10-07
- ⁷¹Amazon: Moving towards plastic-free packaging. Blogpost (2019). Available: <https://blog.aboutamazon.in/operations/moving-towards-plastic-free-packaging>. Accessed Sep 20, 2020.
- ⁷²Amazon: Amazon India successfully eliminates 100% single-use plastic in packaging across its Fulfilment Centers. Blogpost (2020). Available: <https://blog.aboutamazon.in/sustainability/amazon-india-successfully-eliminates-100-single-use-plastic-in-packaging-across-its-fulfilment-centers#:~:text=Sustainability,-Amazon%20India%20successfully%20eliminates%20100%25%20single%20use%20plastic%20in%20packaging,an%20environmentally%20sustainable%20supply%20chain>. Accessed: 2020.09.20
- ⁷³Ibid
- ⁷⁴Deutsche Welle. Germany: Amazon pledges to cut use of plastic packaging. Available: <https://www.dw.com/en/germany-amazon-pledges-to-cut-use-of-plastic-packaging/a-59904175>, Accessed: 2021-12-01
- ⁷⁵Handelsblatt Today, "Amazon Germany: Signed, Sealed and Also Delivered" Available: <https://www.handelsblatt.com/english/companies/>

amazon-germany-signed-sealed-and-also-delivered/23536464.html?ticket=ST-244717-TNCJoL57bOExqcyQ3Kk-cas01.example.org

Accessed 2021 12 01

⁷⁶Amazon Operational Note Regarding Germany, Available: <https://oceana.org/wp-content/uploads/sites/18/Amazon-Operational-Note-Germany-and-Single-Use-Plastics-11-30-21-c.pdf>. Accessed 2021 12 02

⁷⁷Amazon: Amazon expands its Pantry service to over 300 cities in India. Press Release (2020.06.30). Available: <https://press.aboutamazon.in/news-releases/news-release-details/amazon-expands-its-pantry-service-over-300-cities-india>. Accessed: 2020.09.20

⁷⁸Amazon: Moving towards plastic-free packaging. Amazon India blogpost. Available: <https://blog.aboutamazon.in/operations/moving-towards-plastic-free-packaging>; Iyenger M (2020) Leap India to enable retail firms' shift from carton boxes to plastic totes for delivery. Moving towards plastic-free packaging. December 5, 2018. Available: <https://www.thehindubusinessline.com/info-tech/leap-india-to-enable-retail-firms-shift-from-carton-boxes-to-plastic-totes-for-delivery/article25673159.ece>. Accessed: 2020.09.20

⁷⁹Amazon: Innovating for sustainability with packaging-free shipments. Updated 2020.06.03. Available: <https://blog.aboutamazon.in/operations/innovating-for-sustainability-with-packaging-free-shipments>. Accessed 2021.10.07

⁸⁰Leonhardt, Megan, CNBC. Here are all the ways you can buy groceries on Amazon—and how much each costs (2019.08.20) Available: <https://www.cnbc.com/2019/08/20/how-to-get-groceries-delivered-through-amazon.html>. Picture of reusable totes. Accessed: 2020.12.05

⁸¹Barrons: Coupang is the Amazon.com of South Korea, but Maybe Even Better (2021). Available: <https://www.barrons.com/articles/coupang-is-the-amazon-com-of-south-korea-but-maybe-even-better-51615590150>. Accessed: 2021-10-07

⁸²Coupang: we are building the future of ecommerce. Available: <https://www.aboutcoupang.com/en/>, Accessed: 2021-10-07

⁸³Digital Commerce 360 : Prime membership and broad selection drive sales for Amazon. Available: <https://www.digitalcommerce360.com/article/amazon-prime-membership/>. Accessed 2021.10.07

⁸⁴Oceana Pollfish survey of Amazon Prime Customers

⁸⁵Modern Retail: Amazon now ships more parcels than fedex. Available: <https://www.modernretail.co/platforms/amazon-now-ships-more-parcels-than-fedex/>. Accessed 2021.10.07

⁸⁶Quigg D (2019) The big ideas and tiny details behind Amazon's new recyclable mailer. Amazon. 26 November 2019. Available: <https://blog.aboutamazon.com/sustainability/the-big-ideas-and-tiny-details-behind-amazons-new-recyclable-mailer>. Accessed: 2021-10-07

⁸⁷Amazon: Sustainability report, 'Further and Faster Together' (2020) Available: <https://sustainability.aboutamazon.com/pdfBuilderDownload?name=amazon-sustainability-2020-report> – page 46, Accessed: 2021-10-07

⁸⁸Houchens K (2020) Amazon: Addressing the challenges of e-commerce. Packaging Europe. 10 March 2020. Available <https://packagingeurope.com/amazon-addressing-the-challenges-of-e-commerce/>. Accessed: 2020.09.20

⁸⁹Kayla Fenton (Principal Product Manager Customer Packaging Experience). Testimony, California Recycling Commission 11/13/20

⁹⁰York, Joanna: Amazon to stop using plastic pouches for deliveries in France. The Connexion 2021-11-16. Available: <https://www.connexionfrance.com/French-news/Amazon-to-stop-using-plastic-pouches-for-deliveries-in-France>. Accessed: 2021-11-19

⁹¹Worford, David: Amazon Adds Recyclable Cold Chain Grocery Delivery Packaging. Environmental + Energy Leader 2021-11-18. Available: <https://www.environmentalleader.com/2021/11/amazon-adds-recyclable-cold-chain-grocery-delivery-packaging/> Accessed: 2021-11-19

⁹²Redmann, Russel: Amazon unveils 'curbside recyclable' grocery delivery packaging. Supermarket News 2021-11-17. Available: <https://www.supermarketnews.com/sustainability/amazon-unveils-curbside-recyclable-grocery-delivery-packaging>. Accessed: 2021-11-19

⁹³Amazon: Amazon certified Frustration Free Packaging, Amazon. Available: <https://www.amazon.com/b/?&node=5521637011>. Accessed 2021.10.07

⁹⁴Amazon: Sustainability report, 'Further and Faster Together' (2020). Available: <https://sustainability.aboutamazon.com/pdfBuilderDownload?name=amazon-sustainability-2020-report> – page 45, Accessed: 2021-10-07

⁹⁵Amazon: Sustainability report, 'Further and Faster Together' (2020). Available: <https://sustainability.aboutamazon.com/pdfBuilderDownload?name=amazon-sustainability-2020-report> – page 3, Accessed: 2021-10-07

⁹⁶Amazon: Vendor incentive program announcement (2020) Available: <https://d39w7f4ix9f5s9.cloudfront.net/22/45/9d5a1fe04769942c8b1d152280dc/ffp-vendor-incentive-program-announcement-and-faq-feb-20-20201.pdf>. Infographic on Page 3. Accessed:2020.09.20

⁹⁷Amazon: Sustainability report, 'Further and Faster Together' (2020). Available: <https://sustainability.aboutamazon.com/pdfBuilderDownload?name=amazon-sustainability-2020-report> – page 45, Accessed: 2021-10-07

⁹⁸Amazon.jobs: Amazon's Leadership Principles. Available: <https://www.amazon.jobs/en/principles>. Accessed: 2020.09.20

⁹⁹Medium: "Customer obsession" is key to Amazon's success. The Do school. (2019). Available: <https://medium.com/purposeful-retail/customer-obsession-is-key-to-amazons-success-4d01e062fd72#:~:text=Amazon%20is%20a%20company%20driven,to%20invent%20on%20their%20behalf.&text=We%20start%20with%20customers%20and,define%20and%20guide%20our%20efforts>. Accessed: Oct 7, 2021

¹⁰⁰Amazon, About Us. Available: <https://www.aboutamazon.com/about-us>. Accessed: 2021-10-07

¹⁰¹Oceana Survey: Amazon Customers Overwhelmingly Concerned About Plastic Pollution, Want Plastic-Free Choices. Available: <https://oceana.org/press-center/press-releases/survey-amazon-customers-overwhelmingly-concerned-about-plastic-pollution>. Accessed: 2020.09.20

¹⁰²Change.org: Get Amazon to Offer Plastic-Free Packaging Options. Change.org. Available: <https://www.change.org/p/amazon-com-get-amazon-to-offer-plastic-free-packaging-options>. Accessed: 2020.09.20

- ¹⁰³Responsible Investor, Plastic Resolution at Amazon AGM gets 35% support (2021). Available: <https://www.responsible-investor.com/articles/daily-esg-briefing-plastics-resolution-at-amazon-agm-gets-35-support>. Accessed: 2021.10.07
- ¹⁰⁴Houchens K (2020) Amazon: Addressing the challenges of e-commerce. Packaging Europe. 10 March 2020. Available: <https://packagingeurope.com/amazon-addressing-the-challenges-of-e-commerce/>. Accessed: 2020.09.20
- ¹⁰⁵World Economic Forum, The New Plastic Economy : Rethinking the Future of Plastics. Available: http://www3.weforum.org/docs/WEF_The_New_Plastics_Economy.pdf - page 13. Accessed: 2021-10-07
- ¹⁰⁶Xu, Z., Zhang, Y., Fang, C., Yu, Y., & Ma, T. 2019. Analysis of China's olefin industry with a system optimization model – With different scenarios of dynamic oil and coal prices. Available: https://www.researchgate.net/publication/337663239_Analysis_of_China%27s_olefin_industry_with_a_system_optimization_model_-_With_different_scenarios_of_dynamic_oil_and_coal_prices. Energy Policy 135: 111004. doi:10.1016/j.enpol.2019.111004. Accessed: 2021-10-07
- ¹⁰⁷Waxman AR, Khomaini A, Leibowicz BD and Olmstead SM (2020) Emissions in the stream: estimating the greenhouse gas impacts of an oil and gas boom. Environmental Research Letters 15: 014004. Available; doi: 10.1088/1748-9326/ab5e6f. Accessed: 2021-10-07
- ¹⁰⁸Amazon: Sustainability report, 'Further and Faster Together' (2020). Available: <https://sustainability.aboutamazon.com/pdfBuilderDownload?name=amazon-sustainability-2020-report> - page 46. Accessed: 2021-12-07
- ¹⁰⁹Higgins-Dunn N (2019) Jeff Bezos is finally ending secrecy over Amazon's role in carbon emissions. CNBC. 08 March 2019. Available: <https://www.cnbc.com/2019/03/08/jeff-bezos-to-end-secrecy-over-amazons-role-in-carbon-emissions.html#:~:text=Jeff%20Bezoz%20is%20finally%20ending%20secrecy%20over%20Amazon's%20role%20in%20carbon%20emissions,-Published%20Fri%2C%20Mar&text=Amazon%20will%20finally%20disclose%20its,online%20giant%20has%20previously%20resisted.&text=Amazon%20won't%20report%20through,an%20F%20for%20non%2Dparticipation>. Accessed: 2020.09.20
- ¹¹⁰Amazon.com (2019) Sustainability: Thinking Big September 2019. Available: <https://d39w7f4ix9f5s9.cloudfront.net/da/7d/b32c89ea479a9d76fb5ec31ed62c/amazon-susty-2019-2.pdf>. Accessed: 2020.12.04
- ¹¹¹Amazon: Amazon Co-founds The Climate Pledge, Setting Goal to Meet the Paris Agreement 10 Years Early. Press Release (2019). Available: <https://press.aboutamazon.com/news-releases/news-release-details/amazon-co-founds-climate-pledge-setting-goal-meet-paris>, Accessed: 2020.09.20
- ¹¹²Amazon.com: Sustainability - US, The Climate Pledge (2020). Available: <https://sustainability.aboutamazon.com/about/the-climate-pledge>. Accessed Sep 20, 2020.
- ¹¹³Amazon: Sustainability report, 'Further and Faster Together' (2020). Available: <https://sustainability.aboutamazon.com/pdfBuilderDownload?name=amazon-sustainability-2020-report> - page 14, Accessed: 2021-10-07
- ¹¹⁴Amazon.com (2020) Staying the course on our commitment to sustainability. Page 21. Available: <https://sustainability.aboutamazon.com/pdfBuilderDownload?name=sustainability-all-in-september-2020>. Accessed: 2020.09.20
- ¹¹⁵ODI Phasing out plastics; Available: <https://www.odi.org/publications/17364-phasing-out-plastics> O&G Links. 2019. p.27, estimates an average of 4.9 metric tons CO₂e per metric ton of plastic as of 2015 (including oil/gas production and end-of-life emissions from incineration, landfill or recycling). Accessed: 2021-10-07
- ¹¹⁶Hann, Plastics: Can Life Cycle Assessment Rise to the Challenge? Eunomia, BFFP(2020). Available: <https://www.eunomia.co.uk/reports-tools/plastics-can-life-cycle-assessment-rise-to-the-challenge/>. Accessed: 2020.09.20
- ¹¹⁷Tearfund: the burning question. Tearfund. Available: https://learn.tearfund.org/~/_media/files/tilz/circular_economy/2020-tearfund-the-burning-question-en.pdf?la=en. Accessed: 2020.09.20. Calculations are based on: Guendehou S et al (2006) 2006 IPCC guidelines for national greenhouse gas inventories, Chapter 5: 'Incineration and open burning of waste', https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/5_Volume5/V5_5_Ch5_IOB.pdf and Towprayoon S (2019) 2019 refinement to the 2006 IPCC guidelines for national greenhouse gas inventories, Chapter 5: 'Incineration and open burning of waste', https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/5_Volume5/19R_V5_5_Ch05_IOB.pdf. Accessed: 2021-10-07
- ¹¹⁸Tearfund:Open burning in backyards, streets and dumps are significant because they cause Black carbon emissions -- (2020) Tearfund the burning question. Tearfund. Available: https://learn.tearfund.org/~/_media/files/tilz/circular_economy/2020-tearfund-the-burning-question-en.pdf?la=en. Accessed: 2020.09.20
- ¹¹⁹Royer S, Ferron s, Wilson S and Karl D, Production of methane and ethylene from plastic in the environment (2018). Available: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0200574>. Accessed: 2021-10-07
- ¹²⁰Pilfold K (2013) A Comparative Life Cycle Assessment of Protective Mailers in the Postal Industry. The University of Calgary. Available: <https://prism.ucalgary.ca/handle/11023/1059>. Accessed: 2021-10-07
- ¹²¹Pravettoni, Ricardo, Plastic debris in the ocean: a multiplicity of sources and pathways, GRID Arendal Marine Litter Vital Graphics (2016). Available: <https://www.grida.no/resources/6922>. Accessed: 2020.09.20
- ¹²²Brooks A, Wang S and Jambeck J (2018) The Chinese import ban and its impact on global plastic waste trade, Science Advances 20 Jun 2018: Vol. 4, no. 6, eaat0131 DOI: 10.1126/sciadv.aat0131. Available: <https://advances.sciencemag.org/content/4/6/eaat0131>. Accessed: 2020.09.20
- ¹²³Forrest A, Giacobazzi L, Dunlop S et.al Eliminating Plastic Pollution: How a Voluntary Contribution From Industry Will Drive the Circular Plastics Economy, Frontiers in Marine Science 6 (2019), 627. Available: https://www.researchgate.net/publication/336022942_Eliminating

[Plastic_Pollution_How_a_Voluntary_Contribution_From_Industry_Will_Drive_the_Circular_Plastics_Economy](#) . Accessed: 2021-10-07

¹²⁴Sherrington C (2019) Plastics in the Marine Environment. Eunomia. Available: <https://www.eunomia.co.uk/reports-tools/plastics-in-the-marine-environment/>. Accessed Sep 20, 2020.

¹²⁵Aguilar R, Sánchez N, Marín P, Álvarez H, Blanco J (2020) Plastic in the deep: an invisible problem. Oceana Europe. Available: <https://europe.oceana.org/en/publications/reports/plastic-deep-invisible-problem>. Accessed: 2020.09.20

¹²⁶Kühn S and van Franeker JA (2020) Quantitative overview of marine debris ingested by marine megafauna. Marine Pollution Bulletin 151: 110858. doi: [10.1016/j.marpolbul.2019.110858](https://doi.org/10.1016/j.marpolbul.2019.110858). Accessed: 2021-10-07

¹²⁷Pfaller J, Kayla M, Goforth M et.al. Odors from marine plastic debris elicit foraging behavior in sea turtles (2019). Current Biology, Volume 30, Issue 5, MARCH 09, 2020. Available: [https://www.cell.com/current-biology/fulltext/S0960-9822\(20\)30115-9?returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS0960982220301159%3Fshowall%3Dtrue](https://www.cell.com/current-biology/fulltext/S0960-9822(20)30115-9?returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS0960982220301159%3Fshowall%3Dtrue). Accessed Sep 20, 2020. Accessed: 2021-10-07

¹²⁸Roman L, Schuyler Q, Wilcox C and Hardesty BD (2020). Plastic pollution is killing marine megafauna, but how do we prioritize policies to reduce mortality? Conservation Letters. Available: [doi: 10.1111/conl.12781](https://doi.org/10.1111/conl.12781). Accessed: 2021-10-07

¹²⁹Warner K, Linske E, Mustain P, Valliant M and Leavitt C (2020) Oceana. Choked, Strangled, Drowned: The Plastics Crisis Unfolding In Our Oceans. Available: <https://usa.oceana.org/publications/reports/choked-strangled-drowned-plastics-crisis-unfolding-our-oceans>. Accessed: 2021-10-07

¹³⁰Hermabessiere L, Dehaut A, Paul-Pont I et.al. (2017) Occurrence and effects of plastic additives on marine environments and organisms: A review. Chemosphere 182 (2017), 781–93. DOI: 10.1016/j.chemosphere.2017.05.096. Available: <https://pubmed.ncbi.nlm.nih.gov/28545000/>. Accessed: 2020.09.20

¹³¹Rochman C, Hoh E, Kurobe T and The S (2013) Ingested plastic transfers hazardous chemicals to fish and induces hepatic stress. Scientific Reports 3 (2013), 3263. Available: <https://www.semanticscholar.org/paper/Ingested-plastic-transfers-hazardous-chemicals-to-Rochman-Hoh/55fb0a512df17e724c994df13af4da6f2c758406>. Accessed: 2021-10-07

¹³²Rochman C, Tahir A, Williams S et.al. Anthropogenic debris in seafood: Plastic debris and fibers from textiles in fish and bivalves sold for human consumption, Scientific Reports 5 (2015), 14340. Available: <https://www.nature.com/articles/srep14340>. Accessed: 2020.09.20

¹³³Kosuth M, Mason S, and Wattenberg E (2018) Anthropogenic contamination of tap water, beer, and sea salt. PloS one 13 (2018), e0194970. Available: https://www.researchgate.net/publication/324471152_Anthropogenic_contamination_of_tap_water_beer_and_sea_salt. Accessed: 2021-10-07

¹³⁴YouTube: Customer Obsession with Jeff Bezos. Available: https://www.youtube.com/watch?v=Yr_vQgzAgDM. Accessed: 2020.09.20

¹³⁵Change.org, Petition. Get Amazon to Offer Plastic-Free Packaging Options. Available: <https://www.change.org/p/amazon-com-get-amazon-to-offer-plastic-free-packaging-options>. Accessed: 2020.09.20



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