Shady Ships

Retail Giants Pollute
Communities and Climate with
Fossil-Fueled Ocean Shipping

Acknowledgments

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Executive Summary

This report exposes the untold environmental and public health impacts of retail companies' reliance on fossil-fueled maritime shipping to bring products into the United States.

Retail giants have outsourced the manufacturing of consumer products for decades. This has driven significant growth in fossil-fueled maritime shipping. Backed by Big Oil, fossil-fueled maritime shipping is so cheap that it helps justify corporations' production of goods overseas. The world's shipping fleet has quadrupled in size since the 1980s to keep up with demand.

Globally, the environmental and public health impacts of shipping's rise are massive. Each year, the shipping industry produces one billion metric tons of climate emissions, causes 6.4 million childhood asthma cases, and contributes to 260,000 premature deaths.

Data on specific companies' contributions to these global numbers, however, is relatively unknown.

Pacific Environment and Stand.earth produced this report to improve public understanding and oversight of corporate responsibility for shipping industry emissions. We sought out to determine which retail companies are responsible for the greatest levels of fossil-fuel pollution because of their annual maritime imports.

Using publicly available national import data and never-before used rigorous research and verification methods, we identified the fifteen retail companies that produce the highest levels of climate and air pollution as a result of their maritime imports to the United States.

Top Findings

1 By importing goods to the U.S. on dirty, fossil-fueled ships in 2019, just 15 retail companies emitted as much climate pollution as the energy use of 1.5 million U.S. homes.

2 Through 2019 imports to the U.S. alone, these 15 retail giants produced as much sulfur oxide pollution as 2 billion trucks and cars, as much particulate matter pollution as 65.7 million cars and trucks, and as much nitrous oxide as 27.4 million cars and trucks.

3 These major polluting companies are hiding from the public the true amount of pollution they produce from shady, fossil-fueled ships. Due to this lack of transparency, this report's investigators could only verify emissions for a fifth of shipments by these retailers—meaning the estimates of their ocean shipping pollution are conservatively low.

4 Retail companies must immediately reduce their maritime emissions using available technologies, move their products off fossil-fueled cargo ships, and commit to 100% zero-emission maritime supply chains by 2030.

Shady Ships Pollute Our Air

When retail giants ship their goods on fossil-fueled cargo ships, they are burning some of the world's dirtiest and carbon-intensive fuels. Tracking the pollution of each company's U.S. imports in 2019, this report reveals that the top 15 polluting retail corporations are producing mass amounts of the following toxic pollutants:

Global SOx / Nox — **10–15%** Maritime Shipping

Overall, maritime shipping accounts for **10–15% of the world's manmade SOx and NOx emissions**.

As a result, maritime shipping emissions are linked to an estimated

6.4M global childhood asthma cases
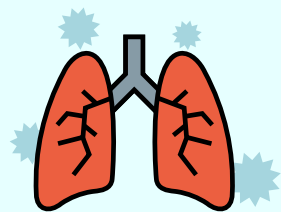
260K premature deaths annually

primarily in low-income communities of color around the world.

"These findings reveal new environmental and public health impacts of retail companies' manufacturing and transport choices — and they are damning."

Sulfur Oxide
SOx

High levels of SOx causes respiratory issues like **asthma**, increases risk of **cancer,** and increased **ocean acidity.**

Retail giants produced

7.3x more SOx emissions than

2B trucks and cars.
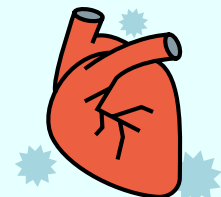
Nitrous Oxide
NOx

High levels of NOx causes respiratory issues like **asthma**, increases risk of **cancer**, and **forms smog**—threatening many port cities such as Los Angeles and Long Beach to violate the federal Clean Air Act.

Retail giants produced as much smog-forming NOx as

27.4M trucks and cars

Particulate Matter 2.5
PM2.5

Global emissions of PM2.5 from shipping are linked to thousands of **lung cancer** and **cardio-pulmonary diseases**.

Retail giants produced as much Particulate Matter 2.5 as the

entire U.S. mining industry.

Our research finds that container imports from America's 15 largest retail giants in 2019 generated as much climate pollution as three coal fired power plants or the energy needed to power 1.5 million American homes. These retail giants produced 7.3x more cancer-causing sulfur oxide (SOx) emissions than all on-road vehicles in the United States combined — or, 2 billion trucks and cars. They produced as much smog-forming NOx, the primary air pollutant of concern to the Ports of Los Angeles and Long Beach because of their legal requirements under the Clean Air Act, as 27.4 million cars and trucks. And they produced as much particulate matter 2.5 (PM2.5) and nitrous oxide (NOx) emissions, pollutants directly linked to asthma, lung failure, heart disease, and cancer, as the entire United States mining industry.

These findings reveal new environmental and public health impacts of retail companies' manufacturing and transport choices — and they are damning. We call on retail companies to take responsibility for their shipping pollution and ultimately eliminate it. Specifically, retail giants should immediately reduce their maritime emissions using available technologies and methods and commit to 100% zero-emission maritime supply chains by 2030.

Context

Most of everything we own — clothes, shoes, food, and technology — at one point travels on a giant container ship. As more U.S. manufacturing has moved overseas, some of the world's most relied on companies have **become reliant on fossil-fueled maritime shipping to import ever-cheaper products.**

Data regarding maritime ship pollution is notoriously murky. **The International Maritime Organization (IMO) maintains a global dashboard of shipping companies' annual fuel consumption but this dashboard is not available to the public.** Most companies, like those studied in this report, do not include maritime shipping emissions in their own voluntary emissions accounting schemes.

This report uses state-of-the art maritime import research methods to better understand the climate and public health impacts of retail companies' maritime imports.

Due to a gross lack of transparency in the maritime shipping sector, this report could only verify emissions for a quarter of shipments of these retail companies. These are likely conservatively low estimates of the maritime shipping emissions that each company is truly responsible for.

Findings

There are the 15 retail companies with the largest maritime import emissions and the levels of pollution we were able **to identify based on available data from 2019 U.S. imports:**

All of these companies have an urgent responsibility to clean up their ship pollution, but the report authors identified four of the fifteen highest-polluting brands that have immense power and influence over the global retail supply chain, and therefore the maritime shipping sector: Walmart, Target, Amazon and IKEA.
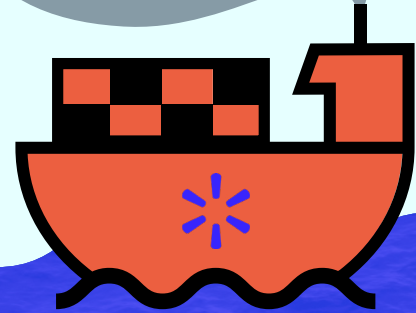
Top 15 Maritime Import Polluters	Climate Emissions (metric tons)				Criteria Air Pollutants (metric tons)					
	TEUs*	CO_2	CH_4	N_2O	SOx	NOx	$PM_{2.5}$	PM_{10}	BC	CO
Walmart	893,390	3,720,355	71.34	215	55,456	99,889	8,082	8,785	298	3,784
Ashley	270,000	2,244,156	43.61	130	34,021	60,408	4,970	5,402	183	2,309
TARGET	600,040	2,051,032	39.45	119	30,906	52,418	4,491	4,881	171	2,088
Dole	230,117	819,074	14.28	45	11,481	23,809	1,602	1,741	54	771
Home Depot	400,100	656,841	12.47	38	10,047	17,424	1,455	1,582	51	663
Chiquita	151,589	572,733	10.25	34	5,673	12,800	845	918	92	548
IKEA	131,684	412,363	7.98	24	5,740	10,876	842	915	32	422
amazon	123,000	391,341	7.33	22	5,804	10,335	839	912	29	391
Samsung	181,328	370,837	7.05	21	5,549	9,982	803	873	30	374
Nike	118,219	313,316	5.97	18	4,641	8,356	673	732	26	317
LG	156,348	259,487	4.94	15	3,986	6,960	577	627	20	262
Redbull	70,700	239,744	4.67	14	3,056	6,365	449	488	19	245
Family Dollar	171,936	220,246	4.12	13	3,359	5,814	485	527	17	220
Williams-Sonoma	88,800	216,419	4.10	12	3,219	5,679	467	508	16	218
Lowes	292,244	210,042	4.15	12	2,957	5,576	433	471	17	217
Totals		12,697,986	241.68	732	185,897	336,690	27,014	29,36	1,056	12,829

* Twenty-foot Equivalent Units, the size of a typical shipping container

Ocean Import CO₂ Emissions

by company based on available 2019 U.S. imports data

3,720,000 metric tons of CO2

2,050,000 metric tons of CO2

Top 15 Polluters Ranked

1	Walmart
2	Ashley Furniture
3	Target
4	Dole
5	Home Depot
6	Chiquita
7	Ikea
8	Amazon
9	Samsung
10	Nike
11	LG
12	Redbull
13	Family Dollar
14	Williams-Sonoma
15	Lowes

#1

Walmart
Walmart is the #1 retail polluter through its use of dirty shipping — emitting as much as an U.S. coal-fired power plant burning for an entire year.
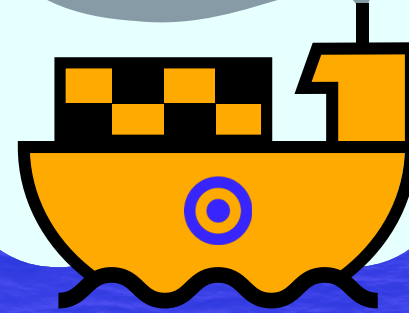
#3

Target
Target's dirty shipping produced more CO2 than the entire CO2 output of all 20 of the world's smallest countries most vulnerable to climate change.

410K metric tons of CO2

390K metric tons of CO2

#7

Ikea
IKEA prides itself on being a sustainability leader in international retail — but its continued use of fossil-fueled ships fails to meet its own climate standards.

#8

Amazon
Researchers could only track 15% of Amazon's ocean shipments — suggesting Amazon's using shady ships to pollute a lot more than we know.

Climate Pollution Equivalencies

These 15 retail companies added 12.7 million metric tons of carbon dioxide (CO2) emissions into the atmosphere through their maritime imports to the United States in 2019. That's equivalent to three coal-fired power plants or the energy needed to power 1.5 million American homes.

Walmart's container imports into the U.S. alone produced 3.7 million metric tons of carbon dioxide, as much as an

entire coal-fired power plant burning in the U.S. for a year.

Target's container imports into the U.S. alone produced 2.2 million metric tons of CO2 —

that's more than the entire CO2 output of 20 of the world's smallest countries most vulnerable to climate change.

Air Pollution Equivalencies, On-Road Vehicles

SOx, NOx, and PM2.5 emissions are some of the most dangerous and deadly types of air pollutants resulting from the burning fossil fuels. These pollutants contribute to asthma, cancer, and premature death and increase mortality risk of respiratory-based illnesses like Covid-19. Many American ports are currently at risk of violating the Clean Air Act because their NOx pollution levels, in particular, are so high.

Container imports from these 15 retail companies produced 7.3x more cancer-causing SOx pollution than all on-road vehicles in the United States combined — **that's 2 billion cars and trucks.**

Container imports from these 15 retail companies produced as much PM2.5 pollution as 65.7 million cars and trucks, or 24% of all on road vehicles in the United States. They produced as much smog-forming NOx, **a primary air pollutant of concern to the Ports of Los Angeles and Long Beach**, as 27.4 million cars and trucks.

Through fossil-fueled maritime imports to the U.S. in 2019 alone, these 15 retail companies alone produced as much smog-forming NOx as

27.4M

on-road cars and trucks.

Through fossil-fueled imports into the U.S. in 2019, the top 15 retail giants produced **as much particulate matter 2.5 (PM2.5) and NOx as the entire U.S. mining industry.**

NOx
PM2.5

These three companies

Ashley HOMESTORE   TARGET   Walmart

produced more SOx and PM2.5 emissions than the single largest point source facility for SOx and PM2.5 emissions in the U.S.

24,138.15 tons SOx
Boiler Unit #1 at the Big Brown Steam Electric Station in Freestone, Texas

3,420 tons PM2.5
Trelleborg Coated Systems in Hamblen, Tennessee

Air Pollution Equivalencies, Facility Emissions

The U.S. EPA uses "facility emissions" to categorize emissions that occur at major power plants, production plants, manufacturing warehouses, etc. The largest facility sources include power plants, oil and gas plants, refiners. Once again, the maritime import emissions from retail giants emit more fossil fuel pollution than the largest facilities in the United States. You can see comparisons in Annex II, Table 5.

Indeed, three companies — Walmart, Ashley, and Target — have vessel voyage SOx and PM2.5 emissions that are larger than the single largest point source facility for SO2 and PM2.5 emissions in the United States —

- **Boiler Unit #1** at the Big Brown Steam Electric Station in Freestone, Texas (4,138.15 tons SO2)

- **Trelleborg Coasted Systems** in Hamblen, Tennessee (3,420 tons PM2.5)

Nine companies — Walmart, Ashley, Target, Dole, Home Depot, Chiquita, Ikea, Amazon, and Samsung — have NOx emissions larger than the largest single point source facility in the United States. Walmart cargoes emit

"Every product moved on a ship in 2019 by these 15 companies moved on a fossil-fueled ship."

more SOx emissions than the two largest facility sources in the U.S. combined, and are larger than the largest 13 point sources combined for NOx.

Air Pollution Equivalencies, Point Source Emissions

The U.S. EPA uses "point source" to categorize emissions from manufacturing industries, such as a pipe, ditch, ship or factory smokestack. Factories, mining facilities, sewage treatment plants are major point source emission sources.

Container imports from these 15 companies emitted a**s much PM2.5 and NOx pollution as the entire Mining, Quarrying, and Oil and Gas Extraction industries** in the United States.

Company Choices

Every product moved on a ship in 2019 by these 15 companies moved on a fossil-fueled ship. We found no evidence of these retail companies moving their products into the United States on any other ship propulsion method than internal combustion engines powered by fossil fuels.

Retail companies can immediately reduce their shipping emissions by simply ensuring their current contracts with shippers require their products move on a company's cleanest ships. Indeed, we found a significant difference between the efficiencies of the retail company moving goods on the most efficient ships vs. the lowest performing ships.

Lack of Transparency in Maritime Data Process

There are significant verification gaps between container shipments recorded in the Journal of Commerce (JOC), the official public database of U.S. import emissions, and the manifests that we were able to verify with retailers. This suggests that **many shipments are recorded through shell companies or franchises and that the emissions estimates in this report are likely a conservatively low estimate** of the maritime shipping emissions that can truly be attributed to these companies.

On average, we were able to verify emissions for just over a fifth of the container shipments of these retail companies.

Moreover, these estimates would be much higher especially if we also include the responsibility for 'backhaul' emissions (often empty containers on the return journey), which were excluded from this analysis.

"The emissions estimates in this report are likely a conservatively low estimate of the maritime shipping emissions that can truly be attributed to these companies."
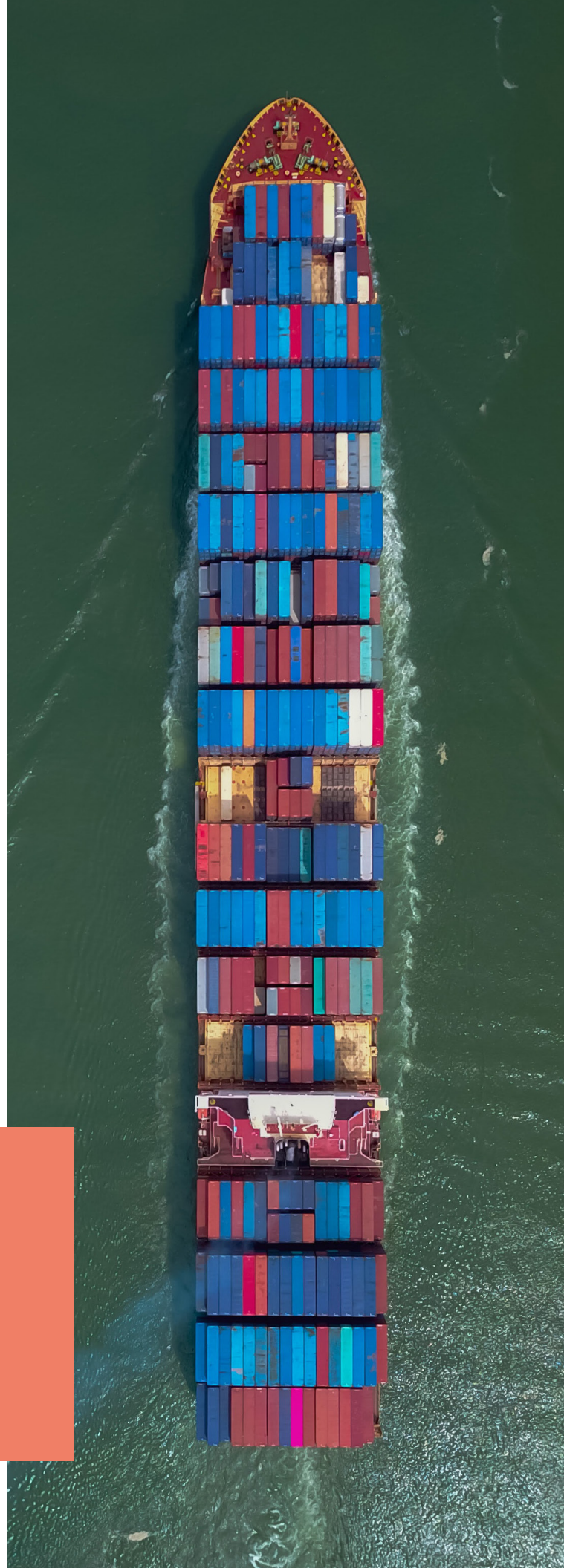
Data, Methodology, and Methodological Limits

For the quantitative analysis underpinning this report, Pacific Environment and Stand.earth commissioned University Maritime Advisory Services (UMAS). Through a partnership with the SEA-CASE project at the Stockholm Environment Institute, UMAS maintains access to a comprehensive set of cargo manifests and Bills of Lading (BoL) for U.S. import/export voyages for 2019. With this dataset, individual shipments for each retailer were linked to vessels that UMAS matched to its internal vessel technical specification database.

Using the same methodology applied in the International Maritime Organization (IMO)'s *Fourth Greenhouse Gas Study*, where UMAS led the work on emissions inventories, UMAS utilized its proprietary fuel consumption estimation model (FUSE) to derive the emissions of these vessels over each voyage of interest. FUSE estimates are provided based on a time history of a ship's activity as observed using satellite and terrestrial AIS data (provided by exactEarth), in combination with engineering and statistical models developed in-house. These fuel consumption and emissions estimates were validated to a high degree of accuracy using continuous monitoring data from thousands of real-world vessels.

Next, emissions estimates were allocated to individual retailers, proportional to cargo volume aboard relevant ships. For example, 500 TEUs (Twenty-foot Equivalent Units, the size of a typical shipping container) of Walmart cargo on a 5000 TEU capacity container vessel would be allocated as 10% of the total emissions released during its voyage. This process was repeated for each retailer and manifest entry, and the results were aggregated to generate annual emissions estimates per retailer.

As mentioned above, UMAS was able to verify emissions for just over a fifth of the container shipments of these retail companies. With this baseline information, UMAS extrapolated for the remainder (unmatched) shipments for each company to produce a credible assumption of total emissions.

The method employed has three key limitations.

1 These methodologies could not identify cargo voyages attributed to imports through shell companies and franchises that use highly dissimilar naming conventions to the parent retailer. The analysts' view is that the emissions levels unveiled in this report are therefore likely lower than these companies' real-life emissions. For instance, the analysts were only able to allocate emissions for around 15% of containers shipped in by Amazon.

2 These methodologies did not include efforts to geo-locate the impact of emissions. This study presents climate and air emissions generated during a cargo shipment's entire oceanic voyage. Therefore, the criteria air pollutant emissions numbers shown herein do not all reach American air basins.

3 The methodology does not include emissions associated with the return journey of the vessels (backhaul), and therefore represent a lower estimate compared to the emissions from the full round trip.

To **contextualize emissions impacts on climate emissions**, Pacific Environment and Stand.earth converted the aggregate data into relatable equivalencies, using the carbon equivalencies calculator hosted by the U.S. Environmental Protection Agency (EPA).

To **evaluate air pollution equivalencies,** Pacific Environment and Stand.earth analyzed comparative abatement of emissions from ships using facility-level data from the U.S. Environmental Protection Agency's 2017 National Emissions Inventory (NEI).

The world's shipping fleet has

quadrupled

the size it was in the 1980's.

Germany

Maritime Shipping

Every single merchant ship in operation today runs on fossil fuels. If maritime shipping were a country, it would be the world's 6th largest polluter, producing the same amount of emissions as Germany.

50,000

merchant ships carry more than

11 billion

metric tons of cargo every year —around 80% of world trade.

80%
of world trade runs on fossil fuels

Big Oil Backs Big Shipping

Backed by Big Oil, the shipping industry has boomed during the era of economic globalization. The world's shipping fleet has quadrupled in size since the 1980s. Today, over 50,000 merchant ships carry more than 11 billion metric tons of cargo every year — around 80% of world trade. **Every single merchant ship in operation today runs on fossil fuels.**

> "In the face of climate emergency, the time is now to force the shipping industry to zero."

For centuries, all the ships that crossed the oceans were zero-emission vessels powered by renewable energy — the wind in their sails.

In the early 1900s, at the dawn of industrialization, the shipping industry switched to diesel fuels. As demand for gasoline and other refined crude oil products heated up, **"Big Oil" found a friend in "Big Shipping."**

Around 1920, oil and shipping companies realized that ship engines could run on bottom-of-the-barrel fuel oils left over from the oil refining process. Oil companies would otherwise throw those oils away without a profit, so it was cheap and readily available for purchase by the shipping industry.

By 1950, almost all of the world's merchant ships ran on this "heavy fuel oil," a gunky black tar-like substance that remains after all the transparent road fuels like gasoline and diesel are taken out of crude oil. Shipping oil is so dirty, sometimes chemical waste and melted car tires that companies don't want to dispose of safely are just blended into shipping fuel and then used to move products. Effectively, ships are acting as the hazardous waste incinerators for the world's oil refineries, with far less oversight.

As the oil industry struggles for survival, it views shipping as one of its lifeline industries. Indeed, **Shell's 2020 report to shareholders identifies marine shipping as one of its most profitable forecasted revenue streams.**

Not only does Big Oil provide Big Shipping with fossil fuels to move their fleets, but they are also one of the shipping industry's biggest clients. Nearly 40% of the shipping industry's global cargo exists solely to transport coal, oil, and fossil gas.

Oil majors are embedded in shipping industry associations who neuter and delay effective global environmental regulation of the shipping industry at the International Maritime Organization (IMO).

With an absolute zero-emission transition for the shipping industry finally on the horizon, oil companies are setting up industry associations and lobbying alliances for shipping's clean energy transition — with a catch. They are pushing companies and policymakers to fossil-based fuels like fossil gas, and fossil-based hydrogen.

In the face of climate emergency, the time is now to force the shipping industry to zero.

Major retail companies must move their business away from Big Oil. Moving away from fossil-fueled shipping must be part of this plan.

Shoppers Want Zero-Emission Shipping

American consumers are eager and ready to support cleaner shipping. In an October 2020 poll conducted by Yale University, George Mason University, and Climate Nexus, a substantial majority of American shoppers (74%) replied that they would **change where they shop to support more cleanly shipped products**. The poll also found that almost **all of these shoppers (70%) would continue patronizing a company if the price of goods marginally increased due to cleaner shipping decisions.**

Three-quarters (75%) of Americans polled felt more favorably toward a company that imported their products using the cleanest fuel available, and 73% were favorable toward a company that was the first to ship their products on a zero-emissions ship. Finally, 72% were favorable to a company that reduced shipping-related emissions by just a third of their current emissions .

More than eight in 10 respondents (84%) agree that the shipping industry should be doing more to reduce the climate impacts of shipping goods around the world. Seven in ten (70%) would prefer to shop with the leading clean company, even if using clean ships raised the price of goods.

Fortunately for consumers, zero-emission shipping will not hurt their pocketbooks. Maersk, the world's largest shipping company, estimates that **decarbonizing shipping will likely add only 6 cents to a pair of $100 running shoes.**

Shoppers want clean ships:

84%

of consumers thought that the shipping industry should do more to reduce the environmental impacts of global shipping goods

3/4

of consumers would be more likely to shop at companies that use cleaner ways to ship goods

7 in 10

of consumers would continue to shop at a brand even if using clean ships raised prices

~~$100.00~~
$100.06

decarbonizing shipping will add only 6 cents to a $100 pair of shoes

Shipping Needs Climate Leaders

In January 2021, the United Nations Climate Champions announced a 'Race to Zero' Breakthrough target for the shipping industry of achieving 5% zero-emission fuels by 2030. Each year, just 10 large deep-sea shipping routes emit 7 million tons of CO2. These 10 routes alone could make up almost 1% of the total 5% of zero-emission fuels needed.

The companies identified in this report alone have the market power to make this change happen alone, kick-starting the achievement of this first-mover goal.

Pandemic Shipping Boom, Rising Emissions

This report analyzes retail companies' maritime emissions from 2019, before Covid-19. Today, container shipping is booming. With billions of people at home all at once, e-commerce purchases went soaring. Combined with post-pandemic government recovery packages, there are simply not enough container ships in the world today to keep up with demand, especially the U.S. market.

Shipping companies are now able to charge retailers like Walmart, Target, IKEA, and Amazon to pay ever-higher freight rates to keep their cargo on U.S.-bound ships. Maersk, the world's largest shipping company, reported $12.4 billion in Q1 2021 unaudited revenue and expects high container demand to continue through 2022. The global order book for new container ships is at a 5-year high.

Swimming in profits, major shipping companies have no excuse to not pay up for cleaner shipping options —

like adding wind harnessing technologies onto existing ships, which can reduce up to 30% of greenhouse gas emissions per voyage and 8–10% per year.

There has never been a better time for them to invest what it takes to develop and procure 100% zero-emission cargo ships, for which the main engine technologies are expected to be ready by 2024 according to major engine manufacturers.

Retail giants must demand cleaner options from their carriers now.

> **"Effectively, ships are acting as the hazardous waste incinerators for the world's oil refineries, with far less oversight."**

Conclusions

Retail giants are polluting communities and climate through their fossil-fueled maritime shipping at an enormous scale. If retail companies are to continue relying on fossil-fueled shipping to import their products, they must take responsibility for the pollution they generate on the voyage.

Without including maritime shipping emissions in their corporate responsibility or climate reporting, these retail companies are not living up to the spirit of their climate commitments or their duty to the customers they serve.

Actions Retail Giants Must Take

Retail companies have unique responsibilities to their customers. We are calling on major retailers to:

Abandon Dirty Ships

Stop moving products on fossil-fueled ships, reject false solutions like LNG, and immediately demand ships that incorporate existing technology and methods to reduce emissions, including wind assist propulsion and slow steaming.
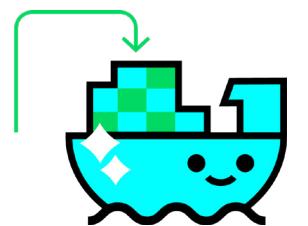
Set Sail First

Sign contracts now to ship your goods on the world's first zero-emission ships, accelerating investment, development, and production in zero-emission shipping.
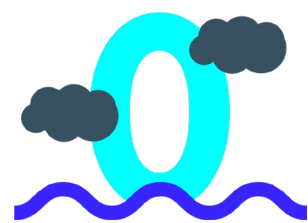
Put Zero at the Helm

Commit to 100% zero-emission shipping by 2030.

Actions U.S. Policy Makers Must Take

Companies alone will not achieve 100% zero-emission shipping. Ambitious, mandatory regulations that force new technologies and create new markets are essential. We call on U.S. policymakers to:

Set a clean ship standard aligned with 1.5C

On April 20, 2021, the U.S. committed to pursuing an absolute zero-emission shipping industry by 2050. This is a good start. The U.S. should now mandate climate and air emissions reductions for all ships that dock American ports accordingly.

Improve transparency in maritime import/export emissions data

The U.S. should establish a domestic Monitoring, Reporting, and Verification System and imandate companies to disclose in customs — cargo declarations all shipping affiliations (such as parent company and/or beneficial owner) in cargo manifests and Bills of Lading.

Make polluters pay

Impose fees on ships' air and climate pollution to accelerate revenue generation for low and zero-emission shipping technologies.

Annex II | **Emissions Tables**

Table 1 Vessel voyage emissions, by company, for criteria and GHG pollutants. Produced by the University Maritime Advisory Services (UMAS).

	GHG Emissions (metric tonnes)				Criteria Air Pollutants (metric tonnes)					
	TEUs	CO_2	CH_4	N_2O	SOx	NOx	$PM_{2.5}$	PM_{10}	BC	CO
Walmart	893,390	3,720,355	71.34	215	55,456	99,889	8,082	8,785	298	3,784
Ashley	270,000	2,244,156	43.61	130	34,021	60,408	4,970	5,402	183	2,309
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Totals		12,697,986	241.68	732	185,897	336,690	27,014	29,363	1,056	12,829

Table 2 Vessel voyage emissions, by company, as a percentage of total **on road** emissions for criteria and GHG pollutants.

	CO_2	CH_4	N_2O	SOx	NOx	$PM_{2.5}$	PM_{10}	CO
Walmart	0.202	0.089	0.485	217.427	2.858	7.085	3.667	0.019
Ashley	0.122	0.055	0.293	133.387	1.728	4.357	2.255	0.012
Target	0.111	0.049	0.267	121.173	1.500	3.937	2.037	0.011
Dole	0.045	0.018	0.102	45.015	0.681	1.404	0.727	0.004
Home Depot	0.036	0.016	0.085	39.391	0.499	1.276	0.660	0.003
Chiquita	0.031	0.013	0.077	22.243	0.366	0.740	0.383	0.003
Ikea	0.022	0.010	0.054	22.506	0.311	0.738	0.382	0.002
Amazon	0.021	0.009	0.051	22.754	0.296	0.736	0.381	0.002
Samsung	0.020	0.009	0.048	21.755	0.286	0.704	0.364	0.002
Nike	0.017	0.007	0.041	18.198	0.239	0.590	0.306	0.002
LG	0.014	0.006	0.034	15.629	0.199	0.506	0.262	0.001
Redbull	0.013	0.006	0.031	11.983	0.182	0.394	0.204	0.001
Family Dollar	0.012	0.005	0.029	13.171	0.166	0.425	0.220	0.001
Williams-Sonoma	0.012	0.005	0.028	12.622	0.162	0.410	0.212	0.001
Lowes	0.011	0.005	0.027	11.594	0.160	0.380	0.196	0.001
Totals	0.690	0.302	1.651	728.848	9.634	23.682	12.255	0.066

Table 3 Vessel voyage emissions, as a total of all 15 companies, as a percentage of **point source** emissions by the five highest emitting (SO2) NAICS codes for criteria and GHG pollutants.

NAICS 2	CO_2	CH_4	N_2O	SOx	NOx	$PM_{2.5}$	PM_{10}	CO
21	16.46	0.04	116.69	373.53	107.44	91.48	38.00	6.33
22	0.64	0.11	2.99	13.17	28.92	22.60	19.16	2.14
31	35.56	0.32	30.66	586.55	831.32	167.14	111.45	23.65
32	1.85	0.08	1.08	41.94	54.40	19.06	15.86	1.85
33	15.33	1.21	67.02	195.04	443.28	65.85	57.89	2.53

Table 4 n^{th} largest facility that company vessel voyage emissions are at least equivalent to.

	CO_2	SO_2	NOx	$PM_{2.5}$	PM_{10}
Walmart	179	1	1	1	1
Ashley	302	1	1	1	2
Target	349	1	1	1	2
Dole	764	21	1	2	4
Home Depot	883	31	1	2	5
Chiquita	955	67	1	9	18
Ikea	1110	66	1	9	18
Amazon	1144	66	1	9	18
Samsung	1177	67	1	10	20
Nike	1288	85	5	15	28
LG	1408	105	6	20	40
Redbull	1465	149	11	48	77
Family Dollar	1519	129	12	37	63
Williams-Sonoma	1533	139	12	40	69
Lowes	1566	155	14	53	84

Table 5 n largest facilities *combined* that company vessel voyage emissions are at least equivalent to.

	CO_2	SO_2	NOx	$PM_{2.5}$	PM_{10}
Walmart	179	1	1	1	1
Ashley	302	1	1	1	2
Target	349	1	1	1	2
Dole	764	21	1	2	4
Home Depot	883	31	1	2	5
Chiquita	955	67	1	9	18
Ikea	1110	66	1	9	18
Amazon	1144	66	1	9	18
Samsung	1177	67	1	10	20
Nike	1288	85	5	15	28
LG	1408	105	6	20	40
Redbull	1465	149	11	48	77
Family Dollar	1519	129	12	37	63
Williams-Sonoma	1533	139	12	40	69
Lowes	1566	155	14	53	84

Table 6 Vessel voyage emissions, as a total of all 15 companies, as a percentage of **point source** emissions by the five highest emitting (SO2) NAICS codes for criteria and GHG pollutants.

NAICS 2	CO_2	CH_4	N_2O	SOx	NOx	$PM_{2.5}$	PM_{10}	CO
21	16.46	0.04	116.69	373.53	107.44	91.48	38.00	6.33
22	0.64	0.11	2.99	13.17	28.92	22.60	19.16	2.14
31	35.56	0.32	30.66	586.55	831.32	167.14	111.45	23.65
32	1.85	0.08	1.08	41.94	54.40	19.06	15.86	1.85
33	15.33	1.21	67.02	195.04	443.28	65.85	57.89	2.53

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