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Topic: Banning Single-Use Plastics (Debate Website, 2024-01-06)

Background

Definitions

Single use plastics (SUPS)
Courtney Lindwall, January 9, 2020, Single-Use Plastics 101, https://www.nrdc.org/stories/single-use-plastics-101#what
Put simply, **single-use plastics** are goods that are made primarily from fossil fuel–based chemicals (petrochemicals) and **are meant to be disposed of right after use—often, in mere minutes. Single-use plastics are most commonly used for packaging and serviceware, such as bottles, wrappers, straws, and bags.** Though plastic—a chain of synthetic polymers, essentially—was invented in the mid-19th century, it wasn't until the 1970s that its popularity skyrocketed. Manufacturers began replacing traditionally paper or glass staples with lighter or more durable and affordable plastic alternatives; plastic jugs replaced milk jars, for instance. According to a 2017 study titled "Production, Use, and Fate of All Plastics Ever Made," published in the journal Science Advances, 8.3 billion metric tons of plastics have been produced since the 1950s, and half of that in the past 15 years alone.

SUPs include straws for the disabled and surgical gloves
Courtney Lindwall, January 9, 2020, Single-Use Plastics 101, https://www.nrdc.org/stories/single-use-plastics-101#what
There are many uses for plastic that are not only reasonable but important, **such as surgical gloves, or *straws for people with disabilities.***

It includes all plastic bottles
Aiden Miles Morunga, September 7, 2023, Plastic pollution's devastating impact on wildlife, https://www.greenpeace.org/aotearoa/story/plastic-pollutions-devastating-impact-on-wildlife/
Plastic pollution has emerged as one of the most devastating environmental issues of our time. As **plastic polluters like Coca-Cola produce billions of single-use plastic bottles each year**, the devastating impact of plastic pollution on wildlife becomes increasingly evident and deadly.

Single use cosmetics include microplastics
Dirk Anxos at al, 2017, School for Resource and Environmental Studies, Dalhousie University, Halifax, NS, Canada, International policies to reduce plastic marine pollution from single-use plastics (plastic bags and microbeads): A review, Marine Pollution Bulletin, Marine Pollution Bulletin, Volume 118, Issues 1–2, 15 May 2017, Pages 17-26
Microbeads have increasingly been manufactured (to replace natural exfoliating materials, including pumice, oatmeal, and walnut husks) **for single-use cosmetics, such as abrasive exfoliating cleansers and toothpastes** (Chang, 2015**). Recent studies reported that some cosmetic products contain approximately as much plastic by weight as there are in the plastic container packagin**g (UNEP, 2015). **Microbeads are designed to be disposed of via wastewater treatment infrastructure. However, wastewater treatment facilities are not designed to remove manufactured microplastic particles, which means that these are currently released into aquatic ecosystems. An estimated 8 trillion microbeads are released into aquatic environments daily via wastewater treatment plants** (Rochman et al., 2015a).

PRO -- Solvency

Federal Solution

Federal solution best – resolves inconsistencies and preemption problems

Wang et al, 2022, Qingbin Wang, Department of Community Community Development and Applied Economics, University of Vermont, Qingbin Wang is a professor and Angela Tweedy is a graduate research associate at the University of Vermont, and Helen Wang is a research assistant at Smith College, Reducing plastic waste through legislative interventions in the United States: Development, obstacles, potentials, and challenges, Sustainable Horizons, March 2022, Reducing plastic waste through legislative interventions in the United States: Development, obstacles, potentials, and challenges, https://www.sciencedirect.com/science/article/pii/S2772737822000086

The distribution of more than 100 billion plastic bags every year in the United States has caused many environmental problems and an increasing number of local and state governments have enacted ordinances and legislations to ban or tax single-use plastic bags and other plastic products. By February 2022, a total of 11 states had enacted statewide plastic bag bans and several other states have proposed similar legislative bills. This paper reviews the development of state-level plastic bag legislation, discusses the preemption conflicts between local and state governments and other obstacles, and assesses the potentials and challenges of further plastic bag legislation for enhancing the effectiveness and efficiency of legislative interventions. This study suggests that **the United States should start to develop federal plastic bag legislation to overcome the preemption conflicts between state and local governments, reduce the inconsistencies in plastic bag legislations across states, and catch up with many other developed nations in plastic waste reduction**.

Inconsistency in bans now means people shop outside the local areas, increasing unemployment in bag ban areas.

Now, the bag applies everywhere so people will shop in the same locations

Heather Caliendo, 2013, February 6, The economic effect of plastic bag bans. Plastics Today. https://www.plasticstoday.com/business/the-economic-effect-of-plastic-bag-bans

A study from the National Center for Policy Analysis claims that **a ban on plastic bags used by grocers and retailers can negatively impact sales in the ban area and increase sales among stores just outside the bag ban region.** The NCPA surveyed store managers in Los Angeles County, where a ban of thin-film bags took effect in July 2011. The group conducted a survey of 80 large stores such as supermarkets and variety shops affected by the ban. Additionally, each large store in unincorporated Los Angeles County was matched with one or two other stores within two miles and also in an incorporated area. The stores were matched in order to compare the effect of any displacement of commerce due to the ban. During a one-year period, before and after the ban**, the majority of stores surveyed in areas with a ban reported an overall average sales decline of nearly 6%. While the majority of respondents surveyed in areas without a ban reported an overall average sales growth of 9%.** 20120606-180220-g_0_0_0.jpgThe study also sought to determine if consumers changed their shopping behavior by increasing purchases at stores that could still offer plastic bags. Pamela Villarreal, NCPA senior fellow, told PlasticsToday it was interesting to find that consumers chose to shop at stores unaffected by the ban. "What we suspect is people that live in an area under a bag ban, but are in close proximity to an area without one, will 'vote with their feet,'" she said. "We often hear that people oppose plastic bags, but it sure does look like a lot of people do like them."

The existing state regulations are not consistent

Wang et al, 2022, Qingbin Wang, Department of Community Community Development and Applied Economics, University of Vermont, Qingbin Wang is a professor and Angela Tweedy is a graduate research associate at the University of Vermont, and Helen Wang is a research assistant at Smith College, Reducing plastic waste through legislative interventions in the United States: Development, obstacles, potentials, and challenges, Sustainable Horizons, March 2022, Reducing plastic waste through legislative interventions in the United States: Development, obstacles, potentials, and challenges, https://www.sciencedirect.com/science/article/pii/S2772737822000086

The statewide plastic bag interventions implemented by the 11 states in the United States have significantly different characteristics. Information reported in Table 1 suggests six major findings. First, **there are differences in the businesses that are covere**d in the plastic bag legislations across states. While the legislation in most states applies to “all businesses,” including retailers and restaurants, there are exceptions for this in two states (Delaware and Colorado). **For example, in Delaware, the legislation applies**

only to retailers with an area of more than 7,000 square feet or with three or more locations with more than 3,000 square feet each. The legislation also allows municipalities with populations over 50,000 to require stores with more than 500 square feet to comply. In Colorado, the legislation exempts "small stores," defined as retailers that operate solely in Colorado, have three or fewer locations, and are not part of a franchise, corporation, or partnership that has physical locations outside of Colorado.

Second, plastic bag bans seem more popular than usage fees, likely because a ban is less complicated than charging fees for the use of plastic bags (Romer and Tamminen, 2014). **Some states also include a transition period before** the ban on single-use plastic bags takes effect, charging a fee per bag in the interim. For example, Connecticut charged a fee of $0.10 per plastic bag before the state's ban took effect in July 2021 and Colorado will impose a fee from January 2021 to the end of 2023; Colorado's fee will then be replaced by a statewide ban on January 1, 2024.

Third, the regulations and requirements for paper bags vary quite a bit across the states. Six states (California, Oregon, Maine, Vermont, Washington, and Colorado) require paper bags to be recyclable, made of recycled material, or both. The same six states and the county of Honolulu require businesses to charge consumers $0.05 to $0.15 per paper bag. New York allows for counties to opt-in to requiring a fee of $0.05 per paper bag. In Maine, a retail establishment is not required to charge a fee for paper bags if less than 2% of the establishment's sales are for food and it has an area of fewer than 10,000 square feet. This exception to the paper bag fee also applies to restaurants and hunger-relief organizations that distribute food to consumers at no cost. On the other hand, New Jersey considers paper bags to be single-use and has banned them alongside single-use plastic bags to reduce the emissions and energy expenditures that come with manufacturing and transporting paper bags.

Fourth, the recipient of the bag fee and the fines collected for noncompliance vary from state to state. Seven states that require a fee allow businesses to keep the revenue collected to cover the costs for implementation, distribution of paper or reusable bags, and educational materials. Meanwhile, New York and Connecticut require the bag fees collected by the businesses to be paid to the state, and Colorado requires 60% of the bag fees to be paid to the municipality or county where the businesses are located and the other 40% to be kept by the businesses. In four states, customers of the WIC (Women, Infants, and Children) program and SNAP (Supplemental Nutrition Assistance Program) are exempt from paying the bag fees. Fines for noncompliance are also paid to the state in most cases, except for in Hawaii (where each county collects the respective fine), in California (where fines are collected by the local or state office that brought the noncompliance complaint), and in Colorado (where the county in which the violation occurred collects the fee). The Maui County of Hawaii and the state of New Jersey apply the revenue collected from fines toward environmental cleanup. New York divides both the bag fees and the fines between the state's Environmental Protection Fund (60%) and a fund to help with local reusable bag distribution (40%). The plastic bag legislations in the above states also exhibit significant differences in terms of the dollar value of fines levied for violations. For example, the fines for the first violation ranged from a warning in Vermont, New York, New Jersey, and Colorado to up to $500 in Delaware. Fines for the second violation range from $25 in Vermont to up to $1,000 in Delaware and New Jersey. For subsequent offenses, fines are raised to as much as $5,000 in Delaware.

Fifth, more recent state plastic bag legislations have included plastic bags and other products. For example, Vermont, New Jersey, and Colorado have banned businesses from distributing food service products made of expanded polystyrene, a lightweight foam plastic material. They include foam cups, plates, take-out containers, egg cartons, and more. Vermont and New Jersey also require businesses to provide plastic straws only at customer request. Vermont's legislation goes even further by banning businesses from providing plastic drink stirrers as well.

Sixth, in Hawaii, the legislative interventions in the four counties with plastic ordinances have their own variations. The first county to enact legislation was Maui (2008), followed by Kauai (2009), Hawaii (2012), and Honolulu (2014). Although these four counties all banned single-use plastic bags, there are several key differences among their legislative interventions. The county of Hawaii charged a "purchase" fee for single-use plastic bags for the first year the legislation took effect and then banned single-use plastic bags after the end of the year. Also, Maui and Kauai require that paper bags be recyclable and made of recycled material. The county of Honolulu has also placed this requirement on paper bags, as well as a fee of $0.15 per paper bag, which is retained by the establishment. The fines collected for violation are paid to the respective county and, in the county of Maui, the funds are then applied toward the "Open Space, Natural Resources, Cultural Resources, and Scenic Views Preservation Fund."

In addition to the above differences, there are also significant differences in the definition of single-use or reusable plastic bags. Some states base their definition solely on the thickness of the plastic bag, considering anything over 2.25 mils thick to be "reusable" or not considered as single-use, with a few states having a slightly higher requirement for the thickness of the material. In response to this definition based on the thickness, some manufacturers and retailers have been able to avoid the ban by increasing the thickness of the plastic bags being produced and distributed. States like Vermont and New Jersey have included requirements like "sewn handles" in their definition of reusable plastic bags to make it more difficult for manufacturers to continue to supply businesses with altered plastic bags to fit the definition of "reusable". In the state of Hawaii, the county of Honolulu's 2014 law required plastic bags to have a minimum thickness of 2.25 mils and be compostable before they could be considered reusable, but a new law enacted by the county in 2017 banned all bags made of plastic (compostable or otherwise), which now matches the county of Hawaii's definition.

Lack of consistency kills enforcement

Wang et al, 2022, Qingbin Wang, Department of Community Community Development and Applied Economics, University of Vermont, Qingbin Wang is a professor and Angela Tweedy is a graduate research associate at the University of Vermont, and Helen Wang is a research assistant at Smith College, Reducing plastic waste through legislative interventions in the United States: Development, obstacles, potentials, and challenges, Sustainable Horizons, March 2022, Reducing plastic waste through legislative interventions in the United States: Development, obstacles, potentials, and challenges, https://www.sciencedirect.com/science/article/pii/S2772737822000086

Although the United States has made significant progress in plastic bag reduction through local **ordinances and state legislation in the past two decades, especially in recent years, there are at least three major obstacles for further progress. First, as shown in Fig. 1, 19 states have state preemptions that prevent county, city, and other local governments from enacting plastic bag regulations or ordinances.** Such state preemptions have not only nullified the local ordinances that were previously in effect, but also undercut the ongoing efforts of many communities, local governments, nonprofit organizations, and businesses that have been pushing for plastic bag legislation and ordinances. While some large city and local governments have challenged state preemptions in the courts, most local governments simply do not have the resources to fight for local plastic ordinances. For example, Philadelphia and three other Pennsylvania municipalities sued the state over the legislation blocking them from enacting or enforcing bans on plastic bags (McCrystal, 2021). Once the Pennsylvania preemption expired on December 8, 2021, several cities and local governments in the state started to implement their plastic bag ordinances**. While there are different factors for such state preemptions against local plastic bag ordinances, the plastics industry's lobbying efforts and contributions to the state economies, political and personal interests of key state legislators, and the lack of effective grassroot efforts against such preemptions are among the major factors** (Gibbens, 2019). Also, such preemptions against local plastic ordinances in some states like Pennsylvania were included in broader bills and were passed with a lack of legislative debate or public inputs. While a recent study has suggested that states with local plastic bag ordinances are more likely to adopt state-wide legislation (Bell and Todoran, 2022), the states with preemptions not only prevent local plastic bag ordinances, but also have the potential to slow down the adoption of statewide plastic bag legislations in the future. On the other hand, there is growing support for plastic bag legislations from both the general public and local governments in the states with such preemptions (Bartolotta and Hardy, 2021; Townsend et al., 2021).

Second, the U.S. plastic bag regulatory sphere has faced pushback from the plastic bag industry. Studies have found that industry actors have played a key role in influencing not only the types of policies implemented but also the levels of governance at which they are implemented in the United States and around the world (Clapp and Swanston, 2009; Knoblauch et al., 2018). **Clapp and Swanston (2009) discussed the "strong plastics industry and weaker legislation in the US" and examined the efforts made by the industry to prevent or slow down local and state anti-plastic bag movements and to promote a competing norm of recycling and reusing plastic bags. Millions of dollars have been spent by the plastics industry in lobbying against local ordinances and state legislations, launching public relations campaigns, and filing lawsuits against municipalities that have adopted plastic bag ordinances (Romer and Foley, 2012).** The plastics industry has also limited the effectiveness of plastic bag legislations by making its products just thick enough to fall outside the definitions of single-use plastic bags specified in state legislation or local ordinances (Parker, 2019). Policies banning or placing a fee on all plastic bags have been found to be more effective than policies which apply the ban or fee based solely on the

thickness of plastic bags (Adeyanju et al., 2021). A study conducted in Africa found that a combination of plastic bag standards and a fee helped to combat this issue while curbing plastic bag use (Hasson et al., 2007).

Federal action is needed to solve inconsistency

Wang et al, 2022, Qingbin Wang, Department of Community Community Development and Applied Economics, University of Vermont, Qingbin Wang is a professor and Angela Tweedy is a graduate research associate at the University of Vermont, and Helen Wang is a research assistant at Smith College, Reducing plastic waste through legislative interventions in the United States: Development, obstacles, potentials, and challenges, Sustainable Horizons, March 2022, Reducing plastic waste through legislative interventions in the United States: Development, obstacles, potentials, and challenges, https://www.sciencedirect.com/science/article/pii/S2772737822000086

Several opportunities have been identified for plastic bag legislation in the United States. There is growing public awareness about environmental problems, including plastic waste and pollution, and support for strict regulations. Also, there are increasing grassroots efforts pushing for local ordinances, state legislations, and federal legislation to deal with environmental problems. The state preemptions against plastic bag ordinances have prohibited local governments from taking actions but, on the other hand, have stimulated public support for the removal of such preemptions or support for statewide plastic bag legislations to ban or reduce the use of plastic bags. For example, the state of New York had a preemption and then enacted statewide plastic bag ban. There is also an increasing awareness around the world about environmental issues, and this has led to increased public support for environmental issues to be included in some international trade negotiations and agreements. As a highlight of the opportunities, **a federal-level plastic bag or plastic waste legislation has the potential to overcome the preemption conflicts between local and state governments in many states, eliminate legislation inconsistencies across states, and extend a plastic ban to the whole nation.**

Plastic bag legislation still faces several threats. These threats include impacts from the COVID-19 pandemic such as supply chain interruption and increased demand for plastic bags, lobbying efforts of the plastics industry, and the preemptions against local plastic ordinances in 19 states. There is also a political divide in the United States that has caused increasing conflicts between the two main parties, legislators, and even the general public in the post-Trump era, making it hard for many proposed legislations to move forward. Furthermore, there are crowded agendas with many urgent issues in the state and federal legislations, making it more difficult for plastic waste regulation to be added to the agendas. For example, it took more than two years for Vermont's plastic bag bills to be moved from legislative committees to the state legislative agenda.

5. Summary of findings and policy recommendations

While reducing plastic waste has emerged as a major challenge for environmental protection and sustainable development, there is a great need for studying the effectiveness of alternative approaches and interventions. This study has reviewed the development of state-level plastic bag legislations and assessed the potential and challenges of further plastic bag legislation for enhancing the effectiveness and efficiency of legislative interventions. This paper suggests two major findings. First, there are significant differences and inconsistencies in state plastic legislations across states, not only in the definitions of what constitutes a single-use plastic bag, but also in the content and scope of the legislations. For example, some states use a minimum thickness standard to define a reusable plastic bag, while others require such bags to also be compostable or have stitched handles. Some of the legislations exempt businesses under a certain size and customers who participate in WIC and SNAP, while other states do not. Also, the state legislations enacted more recently included other single-use products, such as polystyrene food containers, plastic drink stirrers, and plastic straws. A few states also include paper bags in their bans. These inconsistencies across state legislations have caused confusion and extra costs for consumers, businesses, manufacturers, and government agencies. Second, despite growing support for more strict environmental regulations and legislations to reduce single-use plastics, 19 states have preemptions in place which prohibit local plastic ordinances. Not only are future ordinances prevented, but local ordinances already in place are overridden. These preemptions are often backed by lobbying from the plastic industry, even when a growing number of residents in the states show support for legislation regulating single-use plastics.

To address the obstacles for further legislative interventions on plastic bags and other plastic products in the United States, this study suggests three policy recommendations: First, with more states passing plastic bag legislative interventions in recent years, one potential solution would be enacting a plastic bag intervention on the federal level, as many other countries have done. This would provide three potential benefits: it would overcome the preemption conflicts between state and local governments,

eliminate the inconsistencies across state and local legislations, and extend the legislation to the whole nation. As a result, federal legislation could lead to a more immediate and drastic reduction in single-use plastic waste in the nation.

Second, before federal plastic legislation is enacted, using more consistent definitions of single-use plastic bags and other plastic products, as well as embracing a more consistent content and scope of the legislations across states would reduce confusion for consumers and costs for manufacturers and retailers. This move towards legislative consistency could include a wider definition of what constitutes a single-use plastic bag and make it less feasible for producers to skirt bans by increasing the thickness of their bags. Requiring a wide range or full spectrum of businesses to participate would help consumers remember to bring their own reusable bags and decrease waste even further. Additionally, more consistent content and scope of state legislations would make it easier for manufacturers and retailers, especially international, national, and regional manufacturers and chain retailers, to comply with industry regulations and save costs. Third, public investment in research, information dissemination, environmental education and policy assessment should be increased to enhance public awareness of, participation in, and support for reducing plastic waste. For example, as all the states that have enacted plastic bans require businesses to charge a fee for paper bags, it is very interesting to know the change in the use of paper bags in these states and the environmental impacts of paper bags in comparison with that of plastic bags. Also, studies of consumer behavior and willingness to pay for environmental attributes of bags could help shape future interventions. Knowing more about the successes and failures of policies already enacted by cities, counties, and states when it comes to reducing single-use plastic bags and other plastic products could further aid other states and the federal government in designing more effective legislative interventions.

Solvency Defense

Bans Generally Work

Plastic bag bans reduce usage by 85%

Courtney Lindwall, January 9, 2020, Single-Use Plastics 101, https://www.nrdc.org/stories/single-use-plastics-101#what

Plastic is putting a strain on waste management systems, our oceans, and vulnerable communities the world over. A wave of single-use plastic bans is sweeping the country and the globe—most often on plastic bags, straws, stirrers, and takeout clamshells. (Some places are going so far as to ban single-use plastics entirely; most notably, India intends to go this route by 2022.) Among the U.S. cities to outlaw plastic straws are Malibu, Berkeley, Seattle, and Miami Beach. Plastic bag bans—ideally accompanied by a fee on paper bags—are also catching on. **New York State and Hawaii just passed theirs, set to go into effect in 2020, and California's bag ban, which was passed in 2014, has been shown to have reduced plastic bag usage by 85 percent** (with some customers opting to pay a 10 cent fee for thicker plastic bags) and has reduced coastal pollution.

What do the **bans** accomplish? They **prevent millions of tons of plastic from entering the waste stream each year**. And when it comes to waste that lasts forever, every ton counts. In New York, 23 billion plastic bags are used by residents each year. Not only does banning single-use plastic reduce pollution, but it also reduces demand for plastic production that's contributing to global climate change. But beyond these impacts, the bans have cultural effects. Companies are forced to innovate, rethinking their designs and sourcing sustainable materials. And they help shift consumer mind-sets, as people begin to recognize that exorbitant and avoidable waste is not sustainable.

Bans reduce SUPs by 30-90%

Schnurr, et, al, 2017, Reducing marine pollution from single-use plastics (SUPs): A review, Marine Pollution Bulletin, Reducing marine pollution from single-use plastics (SUPs): A review, Reducing marine pollution from single-use plastics (SUPs): A review - ScienceDirect,
https://www.sciencedirect.com/science/article/abs/pii/S0025326X18307033

Single-use plastics, or SUPs (plastic bags, microbeads, cutlery, straws and polystyrene) are substantial sources of plastic marine pollution, yet preventable via legislative and non-legislative interventions. Various international legislative strategies have been reported to address plastic marine pollution from plastic bags and microbeads, but these have since been accompanied by recent increasing public awareness triggered by international agencies and organizations. The Sixth International Marine Debris Conference highlighted increasing intervention strategies to mitigate SUP pollution. This study presents new multi-jurisdictional legislative interventions to reduce SUPs since 2017 and incorporates emergence of new non-legislative interventions to mitigate other types of SUPs at individual and private-sector levels that complement or influence legislative interventions. Further, **effectiveness of SUP bag interventions (e.g., bans vs. levies) to help reduce SUP marine pollution are presented and range between 33 and 96% reduction in bag use.**

Research shows SUP bag bans work

Eva Touhey, 2019, University of Rhode Island, Touhey, Eva, "THE INFLUENCE OF PLASTIC BAG BANS ON PRO-ENVIRONMENTAL BEHAVIORS IN RHODE ISLAND COASTAL COMMUNITIES" (2019). Open Access Master's Theses. Paper 1468. https://digitalcommons.uri.edu/theses/1468

There are two ways that plastic bag pollution is currently being addressed: environmental policy and behavior change. In order to manage the number of plastic bags ending up in waste management facilities and the ecosystem, governments, both at the local and the state level, have and are continuing to implement environmental policies focused on limiting the use of single-use plastic bags. There are three widely recognized types of single-use plastic bag legislation in practice: (1) Bag fee where a fee is required for use of all carryout bags in a store, (2) Second Generation Ban – ban on thin plastic bags and a fee for using carryout bags that are paper, reusable or compostable, (3) First Generation Ban – ban only on thin plastic bags (Romer, 2018). **Documented citizen science research has shown that first generation plastic bag bans are effective in reducing the amount of single-use plastic bags entering the land and coastline** (COA, 2019).

Answers to: Other Forms of Plastic

Single use plastic is half of all plastic

Courtney Lindwall, January 9, 2020, Single-Use Plastics 101, https://www.nrdc.org/stories/single-use-plastics-101#what

Single-use plastics are a glaring example of the problems with throwaway culture. Instead of investing in quality goods that will last, we often prioritize convenience over durability and consideration of long-term impacts. Our reliance on these plastics means we are accumulating waste at a staggering rate. According to the United Nations Environment Programme, **we produce 300 million tons of plastic each year worldwide, *half of which is for single-use items.* That's nearly equivalent to the weight of the entire human population.**

Answers to: Bans Fail/No Enforcement

States prove bans work

Wang et al, 2022, Qingbin Wang, Department of Community Community Development and Applied Economics, University of Vermont, Qingbin Wang is a professor and Angela Tweedy is a graduate research associate at the University of Vermont, and Helen Wang is a research assistant at Smith College, Reducing plastic waste through legislative interventions in the United States: Development, obstacles, potentials, and challenges, Sustainable Horizons, March 2022, Reducing plastic waste through legislative interventions in the United States: Development, obstacles, potentials, and challenges, https://www.sciencedirect.com/science/article/pii/S2772737822000086

Even with significant variations in plastic bag legislative interventions across states and municipalities in the United States, **studies have shown that such interventions have significantly reduced the amount of plastic bag waste.** For example, **a report by California Department of Resources Recycling and Recovery showed that plastic bags accounted for 8%–10% of the waste collected during a coastal cleanup day before California's statewide plastic bag ban but, a year after the ban, such bags made up only 3.87% of the waste picked u**p (Calfas, 2019). Another study conducted in Chicago found that the likelihood of people using single-use plastic bags decreased by 27.7% after Chicago's plastic bag fee was implemented (Homonoff et al., 2018). It was also found that the average use of single-use plastic bags per customer per shopping trip dropped from 2.3 bags to 0.51 bag due to Chicago's plastic bag fee (Calfas, 2019). Education of the public and consumer support of interventions have been found to be important prerequisites for legislative interventions to be successful in sustained plastic bag reduction (Kish, 2018; Nyathi and Togo, 2020; Bezerra et al., 2021).

Because the statewide bans in 7 of the 11 states have been in effect for less than two years and another two have yet to take effect, there has not been enough time and data to assess their effectiveness. However, **the impacts of statewide legislations on the distribution of single-plastic bags are expected to be dramatic because such plastic bags have been totally banned in most of these states and *few violations have been reported.***

Answers to: Plastic Garbage Bag Sales Increase

We are arguing for banning all single use plastics, so we are also arguing for banning plastic garbage bag sales

There is still a massive net reduction

Sophie Lewis, September 15, 2023, https://www.seasidesustainability.org/post/why-plastic-bag-bans-work, Why Plastic Bag Bans Work

Despite the success of these efforts, there have been claims that plastic bag bans have unintended consequences on the environment. A 2019 study in the Journal of Environmental Economics and Management was concerned that single use plastic bag bans increased the amount of garbage bag sales, resulting in more plastic in circulation. **The study found that sales of plastic garbage bags in the state of California did in fact increase post plastic bag ban. However, total plastic usage was still negative and decreased by 70%.** This shows how even though plastic garbage bag sales may have increased as a result of the ban, the amount of plastic in general has decreased, which was the goal of the ban and reduces potential future ocean pollution.

Answers to: Other Bags (Cotton/Paper) Worse

Other bags are not worse when you consider the total environmental externalities

John White, December 16, 2020, The Truth About Plastic Bag Bans, https://www.clf.org/blog/the-truth-about-plastic-bag-bans/?gad_source=1&gclid=Cj0KCQiAkeSsBhDUARIsAK3tiefhJb0iF9iCj9hKXTpxuOUquz6LrW7rUJZByF5HNyEcWYVaBzjLPWgaAi1qEALw_wcB#gsc.tab=0,

Still, **some argue that plastic grocery bags are not part of the carbon problem**. The Environment Agency in the U.K. released a report in 2011 that shows **the carbon impact of paper, reusable plastic, and cotton bags is higher than single-use plastic bags when considering the production, use, and disposal of each. According to the report, a cotton bag would need to be used 131 times to have a lower effect on the climate.** What this report doesn't include is any attempt to calculate the toxicity of plastic or the dangers of littering plastic bags**. Surely its conclusion would be different were it to factor in: the impacts of plastic production, such as the cancerous toxins unleashed by manufacturing plants on low-income and communities of color in Louisiana and western Pennsylvania, the deadly burden of plastic bags on marine animals, such as whales and sea turtles, or the toxic fumes released by waste incinerators when plastic is burned.**

Answers to: Use other Worst Plastics

Net reduction in plastics use

Rebecca Taylor University of Sydney, School of Economics, Journal of Environmental Economics and Management, Volume 93, January 2019, Pages 254-271, Journal of Environmental Economics and Management, Bag leakage: The effect of disposable carryout bag regulations on unregulated bags, https://www.sciencedirect.com/science/article/abs/pii/S0095069618305291

Leakage occurs when partial regulation of consumer products results in increased consumption of these products in unregulated domains. This article quantifies plastic leakage from the banning of plastic carryout bags. **Using quasi-random policy variation in California, I find the elimination of 40 million pounds of plastic carryout bags is offset by a 12 million pound increase in trash bag purchas**es—with small, medium, and tall trash bag sales increasing by 120%, 64%, and 6%, respectively. The results further reveal 12–22% of plastic carryout bags were reused as trash bags pre-regulation and show bag bans shift consumers towards fewer but heavier bags.

Answers to: Banning SUP Doesn't Solve the Core of the Problem

Banning SUPs should be coupled with other legislation

Sophie Lewis, September 15, 2023, https://www.seasidesustainability.org/post/why-plastic-bag-bans-work, Why Plastic Bag Bans Work

The best way for these bans to be successful is to be coupled with other legislation to reduce the amount of plastic being produced and used in order to hinder future ocean pollution. Recent US legislation such as the Save our Seas 2.0 Act of 2020 focuses on recycling and cleaning up plastic. This will not solve the problem and instead mitigates the symptoms of plastic production and use. If there was more legislation that hindered the production and use of single-use plastics, in tandem with the bans already implemented, then it would target the root of the problem, which is the continued use and production of plastic. **Even though banning single use plastic bags may not clean up our oceans, it is certainly a start to reducing the amount of future pollution**. It is important for people to start to drop their plastic habit, which means decreasing the amount of it in circulation. So far there are eight states that have banned single-use plastic bags: California, Connecticut, Delaware, Hawaii, Maine, New York, Oregon and Vermont. There have also been 200 counties and municipalities that have enacted ordinances which either impose a fee on plastic bags or ban them altogether.

Answers to: Other Countries Will Use More Plastic Bags

Most countries have banned plastic bags, so there won't be an increase in use

Wang et al, 2022, Qingbin Wang, Department of Community Community Development and Applied Economics, University of Vermont, Qingbin Wang is a professor and Angela Tweedy is a graduate research associate at the University of Vermont, and Helen Wang is a research assistant at Smith College, Reducing plastic waste through legislative interventions in the United States: Development, obstacles, potentials, and challenges, Sustainable Horizons, March 2022, Reducing plastic waste through legislative interventions in the United States: Development, obstacles, potentials, and challenges,
https://www.sciencedirect.com/science/article/pii/S2772737822000086

While reducing plastic waste has emerged as a major challenge for environmental protection and sustainable development around the world, **more than 90 countries have enacted legislative interventions at national, regional, or municipal levels for reducing the use of plastic bags**, especially lightweight single-use plastic shopping bags (Wagner, 2017; Xanthos and Walker, 2017; Schnurr et al., 2018; Kish, 2018; Nielsen et al., 2019; Macintosh et al., 2020). While Nielsen et al. (2019) provided a broad review of legislative interventions on plastic bags around the world, Wagner (2017) and Kish (2018) reported comprehensive reviews of legislative actions for reducing the use of plastic bags in the United States

Many international plastic bag bans

Dirk Anxos at al, 2017, School for Resource and Environmental Studies, Dalhousie University, Halifax, NS, Canada, International policies to reduce plastic marine pollution from single-use plastics (plastic bags and microbeads): A review, Marine Pollution Bulletin, Marine Pollution Bulletin, Volume 118, Issues 1–2, 15 May 2017, Pages 17-26

Interventions to reduce the use of plastic bags have been varied in range and scope. Governments all over the world have strategies to ban the sale of lightweight bags, charge customers for lightweight bags and/or generate taxes from stores who sell them (Fig. 1; Table 1). For example, bans, partial bans, and fees have been enacted by some local jurisdictions in North America, Australia, and the United Kingdom. Some countries in Europe where interventions are widespread, impose a fee per bag. Germany and Denmark were early adopters of plastic bag bans in most retail stores in 1991 and 1994. However, since 2002, countries in Africa, Asia, and the rest of Europe have steadily introduced bans (South Africa, Bangladesh and India) or levies (Ireland) on plastic bag consumption. In most cases, **national approaches have been undertaken. Several countries in Africa and Asia completely banned the use of plastic bags** (Agence France-Press, 2011, Dikgang et al., 2012, Earth Resource Foundation, n.d). Additionally, **many African, Asian and European countries have implemented levies on the use of plastic bags** (Zero Waste Scotland, 2014, Poortinga et al., 2013). Levies range in cost, frequency (e.g., Malaysia charges a levy on plastic bags on Saturday only (Asmuni et al., 2015)), and in plastic bag quality (e.g., several countries have levies on bags below a minimum thickness (Dikgang et al., 2012, Block, 2013)). Generally, bans on plastic bag thickness are inconsistent (ranging between < 20 to < 60 μm), making environmentally informed decisions for consumers and retailers difficult.

PRO –Harms of Single Use Plastic

General Environmental Impacts of Plastics

Many negative environmental impacts

Jill Bartolaa, 2021, Ohio Sea Grant College Program, Columbus, OH, Ban the Bag: Support for Plastic Bag Reduction Strategies in Northeast Ohio, Journal of Contemporary Water Research & Education, https://onlinelibrary.wiley.com/doi/full/10.1111/j.1936-704X.2021.3361.x

Plastic pollution negatively affects coastal and marine environments (Derraik 2002; Teuten et al. 2009; Thompson et al. 2009) **because it poses a risk to wildlife** (especially birds) **and fish health from ingestion, entanglement, and exposure to toxic chemicals** (Moore et al. 2001; Derraik 2002; Moore 2008; Barnes et al. 2009; Cole et al. 2011; Lavers et al. 2014). **Improper disposal of plastics also threatens human health** (Alabi et al. 2019) **by negatively affecting gut health** (Lu et al. 2019) and **increasing reproductive risks and infertility issues caused by exposure to endocrine disrupting chemicals** (Swan and Colino 2021). Plastic in the water or along coasts negatively affects the economy, due to expensive debris removal (Stickel et al. 2012) and loss of tourism revenue because visitors are less likely to recreate on trash filled beaches (English et al. 2019).

Answers to: Plastics Break-Down

Plastics break-down, turning into microplastics that pollute

Sophie Lewis, September 15, 2023, https://www.seasidesustainability.org/post/why-plastic-bag-bans-work, Why Plastic Bag Bans Work

However, they do not stay there forever. **Single use plastic bags only take 20 years to break down–significantly less time than most plastics–but this is not necessarily a good thing. This is because all plastic when it breaks down becomes fragmented particles called microplastics. Microplastics are tiny pieces of plastic that are less than five millimeters in length. They are often ingested by marine animals and seabirds and can cause a multitude of health issues. While plastic bags can be removed from the ocean, microplastics would be almost impossible to remove.**

US Key

Massive toxic plastic bag use in the US

Eva Touhey, 2019, University of Rhode Island, Touhey, Eva, "THE INFLUENCE OF PLASTIC BAG BANS ON PRO-ENVIRONMENTAL BEHAVIORS IN RHODE ISLAND COASTAL COMMUNITIES" (2019). Open Access Master's Theses. Paper 1468. https://digitalcommons.uri.edu/theses/1468

Through the successive entrance of plastic bags into the United States, the use of plastic bags in many aspects of daily life quickly became the consumptive norm. By 2014, the United States alone consumed 103,465 billion single-use plastic bags (Wagner, 2017). The rapid increase and proliferation of the plastic bag in society has framed itself for disaster. In just a short time, **plastic bags have wreaked havoc to waste management systems and the environment. Because of the thin and flexible design, the plastic bag has a very low recyclability rate in the United States and, if it is recycled, the bag often lowers the effectiveness of automated recycling machines** (Wagner, 2017). If plastic bags are not recycled by the consumer, they often end up in landfills where they will remain indefinitely or become litter in the natural environment due to improper disposal**. Due to the product's light weight, plastic bags quickly become airborne, becoming stuck in trees, clogging storm drains, and eventually becoming marine debris** (Barnes et al., 2009). As soon as plastic bags 10 become litter, this creates an opportunity to harm terrestrial and marine organisms through entanglement and ingestion.

Plastic Bags Degrade to Microplastics

Plastic bags degrade to microplastics

Doris **Knoblauch *,**Linda Mederake andUlf SteinORCID Ecologic Institute, 2018, Sustainability 20**18**, 10(6), 1994; https://doi.org/10.3390/su10061994

Finally, **when plastic bags do ultimately break down, they photodegrade into so-called microplastics.** While long-term effects on soil and water quality are not yet clear**, recent studies suggest that microplastics attract, absorb, and later release various toxins and chemical pollutants, including persistent organic pollutants** (POPs) [7,8,9,10]. In addition, **microplastics can be ingested by wildlife and, further along the food chain, humans. Research regarding the impacts of this ingestion is still at an early stage.**

Plastics become microplastics that threaten human health

Ethan Brown, NPR, November 4, 2022, Plastic Bags Are a Problem. Are Plastic Bag Bans a Solution?, https://www.pbs.org/wnet/peril-and-promise/2023/03/plastic-bags-are-a-problem-are-plastic-bag-bans-a-a-solution/

ETHAN: When environmentalists talk about plastic bags though, it's often not about the production process, but rather what happens after we throw them out. **Improperly discarded bags have polluted waterways, clogged sewers, and been found in oceans, affecting the ecosystem of marine creatures. Animals can become entangled in the bags and drown or mistake the bags for food which can clog their intestines and cause them to starve**. I also mistake plastic bags for food sometimes, and let me tell you, Walmart makes a delicious tall kitchen. I mean, throw some Dijon on there and you've got lunch ETHAN: Now, it is worth noting that a single-use plastic grocery bag takes about 20 years to break down in the environment — about as long as it takes the average to break down. You start growing weird pimples at 10, you're crying five times a week at 15, and by 20, someone has to carry you into a therapist's office, throw you on the couch, and say "it's broken, fix it." For plastic though, 20 years is much less time than most other single-use plastic products. So that means fewer animals getting entangled over time which is good, but unfortunately, it also means plastic bags take a lot less time to become microplastics. In fact, 79 percent of microplastics sampled in the marine environment originated from polyethylene specifically. The remaining 21 percent, of course, came from the Kardashians. **Microplastics can be ingested by anyone from seabirds to fish to even humans through our food and water, and can cause health issues, reduce appetites, and even increase the risk of mortali**ty. What's more? You can conceive of the possibility of collecting plastic bags from the ocean, but **microplastics are almost impossible to remove from their environments**. They're less than five millimeters across and they are everywhere, from the oceans to mountaintops to the Arctic to our food and blood. In fact, the only place they haven't been is Dave and Busters. Not a fan of arcade games, I guess. ETHAN: So where do we go from here? That's where this gets interesting. Bag bans seem to be all the rage, but it's not the only option. In fact, it may not even be the most effective option. After the break, we'll discuss where bag bans have shown shortcomings, the pros and cons of other types of grocery bags, and some other solution ideas that haven't gained the same level of popularity as Dijon-crusted plastic.

Climate Change

Plastics Result in Climate Change

Plastics production increases CO2 and climate change

Stephen Leahy, 2019, National Geographic, Microplastics are raining down from the sky, https://www.nationalgeographic.com/environment/article/microplastics-pollution-falls-from-air-even-mountains

Climate change is yet another reason to reduce plastic consumption, a new study published at the same time warns. Nearly all **plastics are made from fossil fuels and this industry resulted in emissions amounting to 1.7 billion metric tonnes of CO2 in 2015**, according to a new study in Nature Climate Change**. With volumes of plastics produced doubling every decade, by 2050 CO2 emissions could reach 6.5 billion tonnes, or about 15 percent of the global carbon budget. If the plastics industry were a country it'd be the fourth largest CO2 emitter behind** China, the U.S., and India. However, aggressive application of renewable energy, recycling, and biomass as a feedstock could keep emissions in 2050 on par with 2015 levels, the study noted. That said, there would also be four times as much plastic being produced.

Marine Pollution

Plastic Generally Threatens the Marine Environment

Massive plastic bag pollution of the marine environment
Sophie Lewis, September 15, 2023, https://www.seasidesustainability.org/post/why-plastic-bag-bans-work, Why Plastic Bag Bans Work
It is no secret that our plastic dependence has become a crisis. Every year around 500 billion plastic grocery bags are used worldwide. There is an estimated 8 million tons of plastic that ends up in the oceans annually. Additionally, according to National Geographic, if the plastic industry were a country, it would be the fourth largest carbon emitter in the world. Yes, the production of these products pollutes our atmosphere and releases toxins into our air, but environmentalists mostly focus on what happens when a plastic bag is discarded. When plastic bags are discarded improperly they pollute waterways, find their way into the oceans and clog sewers. Once they are in the ocean, marine animals may mistake the plastic for food, or get themselves tangled in it.

Plastics kill marine species through entanglement and the release of toxic chemicals
Eva Touhey, 2019, University of Rhode Island, Touhey, Eva, "THE INFLUENCE OF PLASTIC BAG BANS ON PRO-ENVIRONMENTAL BEHAVIORS IN RHODE ISLAND COASTAL COMMUNITIES" (2019). Open Access Master's Theses. Paper 1468. https://digitalcommons.uri.edu/theses/1468
As previously noted, when plastics enter the natural environment, they infect every marine trophic level through ingestion and cause death by entanglement, but **there is also evidence that plastics release toxic chemicals into the ocean from degradation**, destroy marine habitats, and spread invasive species throughout the water column via floating marine plastic (UN, 2016**). Plastics are so pervasive in the natural environment that "plastic is now considered as a geological marker of the Anthropocene, the emerging epoch in which human activities have a decisive influence on the state, dynamics and future of the Earth system**" (Villarrubia-Gómez et al. 2018). Once a novelty, plastic has become a normal attribute in the natural environment and will remain part of varying ecosystems into the immediate and foreseeable future.

Plastics threaten the marine environment
Dirk Anxos at al, 2017, School for Resource and Environmental Studies, Dalhousie University, Halifax, NS, Canada, International policies to reduce plastic marine pollution from single-use plastics (plastic bags and microbeads): A review, Marine Pollution Bulletin, Marine Pollution Bulletin, Volume 118, Issues 1–2, 15 May 2017, Pages 17-26
Plastics are now ubiquitous in the marine environment, and **urgent action is required to mitigate this worsening** trend (Rios net al., 2007, Rochman et al., 2015b). In 2010, an estimated 4.8–12.7 Mt of plastics entered the oceans globally (Jambeck et al., 2015). A 2014 study (from six years of research by the 5 Gyres Institute) estimated that 5.25 trillion plastic particles (weighing 269,000 tons) are floating in the sea. Although the contribution of plastics in man-made garbage is roughly 10% by mass (Barnes et al., 2009), it is estimated that **plastic debris accounts for 60–80% of marine litte**r (Derraik, 2002), reaching 90–95% in some areas (Walker et al., 1997, Walker et al., 2006, Surhoff and Scholz-Böttcher, 2016). Due to its durability, **the lifespan of plastic is estimated to be hundreds to thousands of years** (Wang et al., 2016). In 2014, UNEP announced concern over the threat of widespread plastic waste to marine life.
Plastics have been reported as a problem in the marine environment since the 1970s (Carpenter and Smith, 1972, Colton et al., 1974). However, only recently has the issue of plastic pollution in marine and freshwater environments been identified as a global problem (Andrady, 2011, Eriksen et al., 2013, Vegter et al., 2014, Eerkes-Medrano et al., 2015, Perkins, 2015). **Consequently, marine plastic pollution has become a significant environmental concern for governments, scientists, non-governmental organizations, and members of the public worldwid**e (Seltenrich, 2015). Entanglement of species by marine debris can cause starvation, suffocation, laceration, infection, reduced reproductive success and mortality (Katsanevakis, 2008, Baulch and Perry, 2014, UNEP and NOAA, 2015). Previous studies focused on entanglement of marine mammals and other species in net fragment litter or 'ghost fishing gear' (Walker and Taylor, 1996, Laist, 1997, Clapham et al., 1999, Bullimore et al., 2001, Eriksson and Burton, 2003). For example, Antarctic fur seals are commonly entangled in plastic marine debris (Walker et al., 1997, Waluda and Staniland, 2013). Ingestion of plastics by birds (Moser and Lee, 1992, Robards et al., 1997, Cadee, 2002, Mallory, 2008) and turtles (Mascarenhas et al., 2004, Bugoni et al., 2001, Tomas et al., 2002) have also been widely reported. Plastic bags have been identified, among macroplastic litter items, most harmful to marine biota (Besseling et al., 2015, Hardesty et al., 2015), but can also have impacts beyond marine species.

The existence of plastics in the marine environment presents a number of challenges that hinder economic development. Stranded plastic along shorelines creates an aesthetic issue, which has negative impacts for tourism (Jang et al., 2014). Economic losses are associated with reduced tourism revenues, negative impacts on recreational activities, vessel damage, impairment in marine environments, invasive species transport and damage to public health (Hardesty et al., 2015). Stranded shoreline plastic also negatively impacts shipping, energy production, fishing and aquaculture resources (Cole et al., 2011, Sivan, 2011). A conservative estimate of the overall economic impact of plastics to marine ecosystems is ~$13 billion US/year (Raynaud, 2014), although the true environmental costs are difficult to monetarize. **However, reported impacts of marine plastic debris on marine life include nearly 700 species, from tiny zooplankton to the largest whales, including fish destined for human consumption. Of the hundreds of marine species impacted, 17% are IUCN red listed species and at least 10% have ingested plastics (Gall and Thompson, 2015).**

Single use plastics increase water pollution

Courtney Lindwall, January 9, 2020, Single-Use Plastics 101, https://www.nrdc.org/stories/single-use-plastics-101#what

Although single-use plastic pollution accumulates most visibly on our streets, in fact our water suffers even more. Litter can be the first stage in a waste stream that enters waterways as plastics tossed on the street are washed away by rain or travel via storm drains into rivers and streams. Our waterway plastic pollution is particularly concentrated: Just 10 rivers carry 93 percent of the world's total amount of plastic that enters the oceans via rivers each year.

In 2015 researchers from the University of Georgia estimated that between 4.8 million and 12.7 million metric tons of plastic per year make their way into the oceans via people living within 30 miles of a coast. The majority of this pollution—dominated by single-use plastic waste—comes from countries lacking infrastructure to properly manage waste, particularly in Asia. India, for example, generates 25,940 tons of plastic waste every day but collects only 60 percent of it. (It's also important to remember that waste management is just one part of the global materials cycle. For instance, a lot of the plastic produced in Asian countries is for products that serve U.S. demand—and the United States often sends plastic waste back to these countries for recycling.)

Plastics threaten wildlife

Aiden Miles Morunga, September 7, 2023, Plastic pollution's devastating impact on wildlife, https://www.greenpeace.org/aotearoa/story/plastic-pollutions-devastating-impact-on-wildlife/

It's clear that trying to deal with the endless stream of plastic just isn't working. We need to stop plastic production at its source!

From marine ecosystems to terrestrial habitats, the effects of plastic waste on animals are widespread and deeply concerning. One of the most disturbing consequences of plastic pollution is the ingestion of plastic by wildlife. Animals often mistake plastic debris for food, leading to dire consequences.

Marine creatures like sea turtles, whales, and seabirds like the toroa (Royal Southern Albatross) may ingest plastic bags, bottle caps, and other plastic fragments. These indigestible materials can cause blockages in their digestive systems, leading to starvation, malnutrition, and even death. Plastic particles can also accumulate toxins over time, posing additional health risks to animals that consume them.

Entanglement and injuries.

Discarded fishing nets, plastic ropes, and packaging materials are hazardous to wildlife due to the entanglement they cause. Sea turtles, seals, and seabirds can become trapped in these materials, resulting in injuries, amputations, and a slow and painful death. The physical entanglement disrupts animals' ability to move, hunt, and feed, thereby impacting their overall survival and reproductive success.

Habitat degradation.

Plastic pollution not only directly harms animals but also contributes to habitat degradation. As plastic waste accumulates in ecosystems, it disrupts the natural balance and functioning of habitats. Coral reefs, for instance, are critical marine ecosystems that suffer from plastic pollution. When plastic debris smothers corals, it prevents them from receiving essential sunlight, stifling their growth and weakening the entire ecosystem that relies on them.

Chemical contamination. Plastics are composed of various chemicals, many of which are harmful to both humans and animals. When plastic waste breaks down into smaller particles, known as microplastics, these particles can absorb and concentrate toxic pollutants from the surrounding environment. As animals consume these microplastics, they inadvertently ingest these pollutants, which can disrupt their endocrine systems, cause reproductive issues, weaken immune systems, and potentially lead to long-term health problems.

In 2021, a University of Waikato study revealed “extremely high levels” of microplastics around Bay of Plenty moana. University of Waikato master of science student Anita Lewis found the particles in every sediment sample she took from across the region, between Tauranga Harbour and the eastern coast to Maketu and Ōpōtiki. The findings sparked health concerns for the people who live in the marine ecosystem. At the time, Greenpeace Aotearoa plastics campaigner Juressa Lee said: “The findings are horrendous; there was not one area sampled where microplastics were not present. There were particularly high levels in shellfish, including tuatua, cockles and wedge shells.”

Decomposing plastic bags release toxins into the water

Andrew Macintosh, Amelia Simpson and Teresa Neeman, 2018, Australia National University Law School, Regulating Plastic Shopping Bags in the Australian Capital Territory, https://envcomm.act.gov.au/wp-content/uploads/2022/04/ACT-Plastic-bag-ban-options-analysis.pdf

In addition to the release of methane, the disposal of plastic bags to landfill can contribute to the release of toxins to the environment. Unreacted residual

monomers and chemical additives in plastics can leach from landfills into surface water, groundwater and soils. Microplastics formed from the breakdown of plastic bags can also absorb toxins in landfills then transport them to other terrestrial and aquatic environments through leachate.50 The extent of the chemical risks associated with the disposal of plastic bags to landfill depends on the characteristics of the bags and the design and management of landfills. At well-designed and -managed landfills, where the base is lined to prevent contamination through leachate, drainage systems are maintained to move water off the landfill, and landfill cells are capped, the risks are limited. The landfill-related risks from plastic bags are also likely to be orders of magnitude lower than those associated with other waste types. In the case of the ACT, the Mugga Lane Landfill and now closed West Belconnen Landfill are lined and capped, have well-maintained drainage systems that drain leachate into leachate dams, and are subject to regulatory oversight by the ACT Environment Protection Authority.51 Landfill gas from both sites is also captured and combusted in onsite generators. Some ACT waste is also transported to the Woodlawn Bioreactor in New South Wales. However, like the Mugga Lane and West Belconnen Landfills, Woodlawn is a well-designed and -managed landfill that uses biogas to generate electricity and has facilities to limit leachate risks.

Plastics ensnare wildlife

Andrew Macintosh, Amelia Simpson and Teresa Neeman, 2018, Australia National University Law School, Regulating Plastic Shopping Bags in the Australian Capital Territory, ACT-Plastic-bag-ban-options-analysis.pdf

Given the best practice nature of relevant landfill facilities, the most significant environmental hazards associated with the disposal of plastic bags in the ACT stem from littering and other illegal bag disposal into the general environment. There are four main categories of environmental risk associated with the disposal of plastics into the environment as litter or debris: • ingestion by and entanglement of wildlife; • the potential for plastics to facilitate the spread of invasive species; • the potential for plastic particles to absorb and transfer toxins to humans and wildlife; and • amenity impact

Plastics threaten marine wildlife

Andrew Macintosh, Amelia Simpson and Teresa Neeman, 2018, Australia National University Law School, Regulating Plastic Shopping Bags in the Australian Capital Territory, https://envcomm.act.gov.au/wp-content/uploads/2022/04/ACT-Plastic-bag-ban-options-analysis.pdf

Most of the literature on the ingestion of and entanglement in plastics by wildlife relates to marine organisms, particularly vertebrates.53 There is an extensive scientific literature that documents the adverse impacts of plastic marine debris on wildlife. Plastics are divided into two broad categories for these purposes: macroplastics (larger than 5 mm); and microplastics (less than 5 mm).54 While there are significant gaps in the knowledge base, the adverse impacts associated with macroplastic ingestion and entanglement are relatively well established.55 The impacts associated with the ingestion of microplastics by marine organisms are more uncertain. The available research suggests microplastics are ingested by marine organisms but it is unclear whether, and to what extent, this leads to increased morbidity and mortality.56 While noting this uncertainty, interactions through the ingestion and entanglement of marine debris have been documented for 395 marine species worldwide, 17% of which are listed as threatened on the IUCN Red List.57 Most of the documented interactions have involved entanglement with macroplastics, with the most commonly affected animals being sea turtles, marine mammals and sea birds. Plastic bags are regarded as one of the highest ingestion and entanglement risk items because of their persistence in the environment, three-dimensional

structure and appearance (similarity to marine food sources).58 They are also one of the more common items identified in marine debris surveys.

Plastics result in toxin absorption

Andrew Macintosh, Amelia Simpson and Teresa Neeman, 2018, Australia National University Law School, Regulating Plastic Shopping Bags in the Australian Capital Territory, https://envcomm.act.gov.au/wp-content/uploads/2022/04/ACT-Plastic-bag-ban-options-analysis.pdf

Over the past 10-15 years, there has been growing concern recorded in the scientific literature about the potential for plastic particles, particularly microplastics, to leach toxins into the environment and, possibly more importantly, to absorb and transfer toxins to organisms and ecosystems.71 The ability of microplastics to absorb pollutants (during and after manufacturing), which are subsequently ingested by organisms has been raised as a potential pathway by which persistent organic pollutants such as DDT and PCBs could contaminate food webs and potentially affect human health.72 The scientific evidence on these types of toxicological impacts is limited and mixed. Some studies suggest the risks are material, while others suggest they are not.73 Further research is required to resolve these uncertainties.

Microplastics Threaten the Marine Environment

Small pollution from plastics threatens aquatic organisms

Stephen Leahy, April, 13, 2023, Microplastics are raining down from the sky, https://www.nationalgeographic.com/environment/article/microplastics-pollution-falls-from-air-even-mountains

In what looks like a pristine, remote mountain region, tiny pieces of plastic pollution were found raining down from the sky—raising questions about the global extent of plastic pollution—a first-of-its-kind study has found. Scientists recorded a daily rate of 365 microplastic particles per square meter falling from the sky in the Pyrenees Mountains in southern France. **"It was incredible how much microplastic was being deposited**," said Deonie Allen, a researcher at EcoLab in the School of Agricultural and Life Sciences in Toulouse, France. There were no obvious sources for the microplastics within 60 miles (100 kilometers), said Allen, the lead author of the study published Monday in Nature Geoscience. "Microplastic is a new atmospheric pollutant," Allen said. (Read more about the emerging science of microplastics.) Microplastics are very small pieces of plastic waste. Their presence in oceans and waterways has received a great deal of scientific and media attention in recent years. However, only two previous studies have looked for the presence of microplastics in the air. Both were in cities and their results were comparable, says Allen. Microplastics in the air appear to be ubiquitous. "If you go outside with a UV light, set at a wavelength of 400 nanometers, and shine it sideways you'll see all kinds of plastic particles in the air fluoresce," she said. "It's almost worse indoors. It's all a bit terrifying." Allen and colleagues collected microplastics over a period of five months at a meteorological station about 4,500 feet (1,400 meters) above sea level using atmospheric deposition catchers that look like tall funnels. They counted and analyzed the plastic fragments, fibers, and films at the bottom of the collectors that were less than 300 microns in size. The **human hair averages between 50 and 70** microns in diameter. The smallest particle a human eye can see is about 40 microns. **More than 50 percent of the microplastics found at the station were fragments less than 25 microns in size.** Researchers studied wind patterns to find a source of the microplastics collected, but found none within a 60-mile radius of the region—which is sparsely populated and without industrial, commercial, or large agricultural activities. A quantity of orange quartz-like fine dust was also collected, said co-author Steve Allen. This was likely Saharan dust, as past studies have shown such dust particles, which are as large as 400 microns, can travel thousands of miles. But "no one knows how far microplastics can travel," he added. **Scientists have warned we are creating a "plastic planet".** Some 420 million tons of plastics were produced in 2015, up from just over two million tons in 1950. Over this 65-year period roughly six billion tons ended up either in landfill or in the natural environment, a 2017 study estimated. Plastic waste that starts out as bottles, packaging, and so on degrades over time to microplastic particles or much smaller nanoparticles**. One study estimated there are 15 to 51 trillion microplastics particles floating on the surface of the oceans. A trillion is one thousand billion. A trillion seconds is nearly 32,000 years.** Health impacts of microplastics? People are exposed to microplastics through food and air, but the health effects are unknown, said Stephanie Wright, a researcher at the Centre for Environment and Health at King's College London in the United Kingdom. "We've only recently recognized human exposure to microplastics through the air," said Wright, who wrote a detailed review article on human health and microplastics in 2017. What is known is that microplastics smaller than 25 microns can enter the human body through the nose or mouth and those less than five microns can end up in lung tissue. "We do

know that other types of small particles do have health impacts," Wright said. There is a great deal of concern about fine particulates in the air formed by burning fossil fuels, including black carbon or soot. These have been linked to a wide range of health impacts from asthma to heart attacks to impairing children's memory and IQ. Most countries have air pollution standards to limit the volumes of particles less than 10 microns, and especially those below 2.5 microns, respectively known as PM 10 and PM 2.5 standards. It's also known that microplastics tend to be sticky and can accumulate heavy metals like mercury and persistent organic pollutants (POPs), including brominated flame retardants and polycyclic aromatic hydrocarbons (PAHs). Those materials have known health impacts, said Wright. **The volume of microplastics in the environment is likely going to increase with the rising amounts of plastics being produced, including synthetic textiles,** the scientists warn. Plastics are now being used in roads, bricks, concrete, paints, and a host of other things that might not always be obvious to the public. Yet "there's too much we don't know about microplastics in the environment," Wright said. Far less is known about nanoplastic particles. Nano means really, really small: A billion nanoparticles can fit on the head of a pin. What about nano particles? "No one should be surprised that microplastics are everywhere," said Roman Lehner of the University of Fribourg in Switzerland. Nanoplastics are also everywhere but the technology to detect them doesn't yet exist, said Lehner, who is working on the problem. Nanoparticles can have markedly different chemical and physical properties than the same materials at micro or larger sizes. **One of the unique characteristics of nanoplastics is that because they are so small more atoms are on the surface of a particle compared to its volume. This makes them more chemically reactive**. The potential risks to human health and the environment of nanoplastic particles maybe different from microplastics, said Lehner, who co-authored a new review of the potential risks. **Lab studies have shown adverse impacts of nanoplastics on aquatic organisms. Studies have shown that polystyrene nanoplastics ingested by aquatic organisms passed through cell walls**. This appeared to change behavior and affected endocrine function of fish and other marine species. Lab experiments have also shown nanoplastics cross cell walls in samples of human intestines.

Plastic bags threaten marine wildlife

Doris **Knoblauch *,**Linda Mederake andUlf SteinORCID Ecologic Institute, 2018, Sustainability 20**18**, 10(6), 1994; https://doi.org/10.3390/su10061994

Moreover, plastic bags, alongside other macroplastic items such as fishing nets and gear or beverage bottle caps, were rated as most harmful among the 20 most common marine debris items to (marine) wildlife due to the risk of entanglement

Microplastics are dangerous for wildlife

Courtney Lindwall, January 9, 2020, Single-Use Plastics 101, https://www.nrdc.org/stories/single-use-plastics-101#what

Left alone, plastics don't really break down; they just break up. Over time, sun and heat slowly turn plastics into smaller and smaller pieces until they eventually become what are known as microplastics. These microscopic plastic fragments, no more than 5 millimeters long, are hard to detect—and are just about everywhere. Some microplastics are even small by design, like the microbeads used in facial scrubs or the microfibers in polyester clothing. They end up in the water, eaten by wildlife, and inside our bodies. They've even made their way up to the secluded Pyrenees mountain range and down to the bottom of the Mariana Trench. For wildlife, microplastics can be particularly dangerous; when eaten they can easily accumulate inside an animal's body and cause health issues, like punctured organs or fatal intestinal blockages.

Microplastics harm our health

Courtney Lindwall, January 9, 2020, Single-Use Plastics 101, https://www.nrdc.org/stories/single-use-plastics-101#what

Exposure to microplastics, as well as the chemicals that are added to plastics during processing, harm our health. Many of the chemicals in plastics are known endocrine disruptors, and research has suggested that human exposure could cause health impacts including hormonal imbalances, reproductive problems like infertility, and even cancer. The phthalate DEHP, as just one example from dozens, is often added to plastic goods like shower curtains and garden hoses to make them more flexible—but was also found to be a probable human carcinogen by the U.S. Environmental Protection Agency.

Microplastics are a large threat to the marine environment

Dirk Anxos at al, 2017, School for Resource and Environmental Studies, Dalhousie University, Halifax, NS, Canada, International policies to reduce plastic marine pollution from single-use plastics (plastic bags and microbeads): A review, Marine Pollution Bulletin, Marine Pollution Bulletin, Volume 118, Issues 1–2, 15 May 2017, Pages 17-26

Plastics are comprised of microplastics (first coined by Thompson et al. (2004)) and macroplastics. Macroplastics (> 5 mm) **enter the marine environment via dumping or poor waste management** (Pettipas et al., 2016**). Over the past decade, growing efforts have been made to monitor impacts of microplastics in the marine environmen**t (Seltenrich, 2015). National Oceanic and Atmospheric Administration (NOAA) define microplastics as fragments < 5 mm in diameter (Barboza and Gimenez, 2015), with some researchers using < 1 mm diameter as the threshold (Goldstein et al., 2012). Microplastics comprise: primary microplastics (e.g., microbeads), and secondary microplastics, from degraded macroplastics (e.g., plastic bags) (Ivar do Sul and Costa, 2014, UNEP, 2015, UNEP, 2016, Napper et al., 2015). The annual global production of plastic is ~ 300 million tonnes (Napper et al., 2015), with roughly 50% disposed of after a single-use (Mathalon and Hill, 2014). Established empirical data suggest that **large pieces of plasti**c (macroplastics**) can cause significant harm in the marine environment through entanglement** (Rios et al., 2007). **Recent studies suggest that risks of microplastic**s (including degraded macroplastics, microbeads and microplastic fibres**) in the marine environment may pose more of a threat than macroplast**ics (Browne et al., 2011, Desforges et al., 2014, Thompson, 2015), but research and policies to reduce pollution from these sources are lacking.

Many pollutants in microplastics that threaten the environment

Dirk Anxos at al, 2017, School for Resource and Environmental Studies, Dalhousie University, Halifax, NS, Canada, International policies to reduce plastic marine pollution from single-use plastics (plastic bags and microbeads): A review, Marine Pollution Bulletin, Marine Pollution Bulletin, Volume 118, Issues 1–2, 15 May 2017, Pages 17-26

Microplastics in the marine environment can travel vast distances floating in seawater, or sediment to the seabed (UNEP, 2015). The five plastic gyres established throughout the oceans are well documented, particularly the “Great Pacific Garbage Patch” (Goldstein et al., 2012**). Accumulation in these gyres is exacerbated because plastics take centuries to degrade** (Cole et al., 2011). In addition to floating and stranded plastic debris, the deep sea is possibly the largest global marine litter depocentre (Pham, 2014, Tubau et al., 2015).

Large plastic items, such as discarded fishing rope and nets, can cause entanglement of invertebrates, birds, mammals, and turtles (Harper and Fowler, 1987, Walker and Taylor, 1996, Laist, 1997, Eerkes-Medrano et al., 2015) **but marine environment is also contaminated with much smaller microplastic particles.** These have been reported at the sea surface (Law and Thompson, 2014), stranded on shorelines (Claessens et al., 2011), and on the seabed (Van Cauwenberghe et al., 2015, Tubau et al., 2015). **Microbeads are commonly white or opaque in colour, and research has found microbeads to be commonly mistaken for plankton by many surface feeding fish species. Ingestion of plastics by aquatic organisms is one of the major deleterious environmental impacts in the marine environment** (Baulch and Perry, 2014, UNEP, 2016). Due to their small size and presence in pelagic and benthic ecosystems, contaminants associated with microplastics are potentially bioavailable for many organisms (Barboza and Gimenez, 2015). **Persistent organic pollutants sorbed onto microplastics can accumulate at concentrations several orders of magnitude higher than in ambient seaw**ater (Andrady, 2011). **A growing concern related to microplastics is that they can also enter the human food chain through ingestion of fish, shellfish and filter feeders** (Mathalon and Hill, 2014, Chang, 2015**), causing potential human health impacts** (UNEP, 2015, GESAMP, 2016). **Filter-feeding mussels have been reported to contain microplastics in their tissues** (Besseling et al., 2015, Mathalon and Hill, 2014**), but the toxicological risks are poorly understood and represents an important challenge for future research** (Goldstein et al., 2012, Seltenrich, 2015, Miranda and de Carvalho-Souza, 2016).

Climate Change

Methane

Disposed and degrading plastic bags release methane

Andrew Macintosh, Amelia Simpson and Teresa Neeman, 2018, Australia National University Law School, Regulating Plastic Shopping Bags in the Australian Capital Territory, ACT-Plastic-bag-ban-options-analysis.pdf

The environmental impacts associated with the disposal of plastic bags in landfills depend on the nature of the plastic bags and the design and management of the landfill. **Biodegradable plastic bags that decompose in landfills under anaerobic conditions will result in the release of methane, a** relatively short-lived but potent greenhouse gas.48 In contrast, conventional fossil fuel-based LDPE and HDPE plastic bags do not contain organic materials, are not biodegradable in their natural form and do not release methane as they breakdown.49 Importantly, though, the extent to which the production of methane from biodegradable plastic bags contributes to climate change will depend on whether the relevant landfill captures and combusts the gas. Where the methane is captured and combusted, a proportion of the potential negative climate impacts will be nullified. Moreover, positives can arise where the methane is destroyed in an electricity generator or boiler, which displaces fossil fuel-based energy production.

Carbon Dioxide

Plastics increase carbon dioxide production

Courtney Lindwall, January 9, 2020, Single-Use Plastics 101, https://www.nrdc.org/stories/single-use-plastics-101#what

Our addiction to plastic also has negative impacts on the climate. A 2019 report by the Center for International Environmental Law (CIEL) showed that plastic production contributes to planet-warming greenhouse gas emissions at every point in its life cycle. **The process of drilling for plastic's source materials, oil and gas, leads to methane leaking and flaring and is often combined with clearing forests and wetlands that otherwise would have sequestered carbon**. **Refineries where crude oil is turned into plastic make up one of the most greenhouse gas–intensive industries in the manufacturing sector. And "cracker plants"—which break, or "crack," ethane molecules, a component of natural gas, into the chemical building blocks of plastic products—are energy intensive and highly polluting. According to the CIEL report, in 2015 a mere 24 of these ethane cracker facilities in the United States had the combined carbon output of 3.8 million passenger vehicles. And the recent fracking boom, resulting in a surplus of oil, is fueling a subsequent rise in cracker plants, too. That's bad news for our carbon reduction goals: If plastic production continues unabated, its greenhouse gas emissions could reach 1.34 gigatons per year by 2030—equal to adding nearly 300 new coal-fired power plants—even as the need to curb global climate change becomes more urgent**.

Production of plastic bags releases carbon; decomposition releases methane

Andrew Macintosh, Amelia Simpson and Teresa Neeman, 2018, Australia National University Law School, Regulating Plastic Shopping Bags in the Australian Capital Territory, https://envcomm.act.gov.au/wp-content/uploads/2022/04/ACT-Plastic-bag-ban-options-analysis.pdf

Another example of the sensitivity of attributional LCAs' outputs to assumptions concerns the assumed sources of greenhouse gas emissions. In most plastic bag LCAs, estimates of climate change impacts are primarily based on assumptions regarding the emissions from four sources: emissions associated with the extraction, refining and transport of feedstocks; energy used in the production process; energy used to transport the bags to market; and methane emissions from the decomposition of organic materials in anaerobic conditions.79 **The majority of the greenhouse emissions attributable to plastic bags are typically assumed to emanate from the reliance on fossil fuel-based energy in production processes. However, it is not always the case that the energy used in the production of plastic bags will be exclusively derived from fossil fuels. The attributed climate impacts of plastic bags can vary significantly depending on the assumed balance between fossil and renewable energy.80 Similarly, most LCAs on shopping bags typically do not account for the capture and combustion of methane at landfill sites.** Where LCAs have been undertaken on biodegradable bags, some of the bags are assumed to go to landfill (rather than being recycled, composted, reused or littered) and a proportion of these are assumed to decompose under anaerobic conditions, resulting in the release of methane to the atmosphere. **As noted above, the actual net climate impacts associated with the release of landfill gas depend on whether the methane component of the gas is captured and combusted, and how it is combusted (e.g. is it flared or used to produce energy?). Most LCAs on shopping bags do not account for the potential to capture and combust the methane; they simply assume it escapes into the atmosphere.81 This potentially artificially depresses the relative environmental performance of biodegradable bags.**

Plastic Bag Specifics

Specific environmental harms from plastic bags

Alam et al, 2018, Ohidul Alam a b, Mukaddis Billah c, Ding Yajie a, UNEP_Tongji Institute of Environment for Sustainable Development (IESD), Tongji University, Shanghai 200092, PR China, State Key Laboratory of Pollution Control and Resources Reuse, Tongji University, Shanghai 200092, PR Chin, School of Electronics and Communication Engineering, Tongji University, Shanghai, Resources, Conservation and Recycling, Volume 132, May 2018, Pages 121-129

According to Miller (2012), ab**out 500 billion to one trillion PBs are consumed worldwide annually;** i.e., 1.4–2.7 billion per day, over one million per minute. **Individual consumption of PB is comparatively high in top GDP growth countries but developing countries suffered more from PBs pollution due to dearth of awareness and illegal disposa**l (Bahri, 2005, Islam, 2011). It was found that the annual PBs consumption per capita was 1370 in Hong Kong, 286 in the United States, 263 in Israel, 252 in Taiwan, 235 in Japan, and 223 in China, respectively (Bahri, 2005). Similarly, large amounts of PBs are discarded and illegally disposed of that have brought diverse problems to the environment and the public health (Njeru, 2006; Ramaswamy and Sharma, 2011). The result of unfair management of PBW and PPW is the pollution of soil, air and water resources including increase of urban flash–floods and reduction of agricultural productions (Briassoulis et al., 2014; Eagle et al., 2016). **Many studies have been performed to investigate the environmental and health hazards linked with PBW dis**posal (Ellis et al., 2005; Jalil et al., 2013; Shamim et al., 2010). According to the suggestions of researchers, PB with a minimum thickness of 20–50 μm has already been banned in many countries, especially in developing countries while minimum charge or levy is applied in regions or states in developed countries (Miller, 2012). The alternative bags are also suggested but unfruitful because people are more interested to use PB than other bags (Dikgang et al., 2012; He, 2012; Ritch et al., 2009). Furthermore, the regulation of the consumption of lightweight PB should also apply to heavy weight PB to minimize waste volume (Steensgaard et al., 2017). Unfortunately, what have made PB so useful, such as durability, light weight, hygiene, and low cost, also make problematic when come to its end–of–life phase. Because PBs are often thrown away after being used once, their service life span is very short, estimated to be 20 min averagely and maximum up to 1 year (Miller, 2012; Mutha et al., 2006). **Likewise, most plastic packages are discarded after a relatively short service life and the resulting PPW and PBW are subsequently landfilled, incinerated/recycled and disposed of elsewhere** (Luijsterburg and Goossens, 2014). ***They may gradually release toxicity and pollute surrounding environment*** (Njeru, 2006; Ramaswamy and Sharma, 2011). However, waste bags from nuclear facilities can generate high heat (800 kW) indicating that special caution is needed for such waste management (You et al., 2015). Rice straw co-pyrolysis with PBW showed as a potential energy source with the greater percentage of PB as feedstock materials (Anshar et al., 2017). Plastic bags and packaging materials are manufactured by using different types of polymers whereas heavy metals (HMs) and organometallic compounds (additives) are encapsulated with polymer matrix to optimize its properties and to reduce production cost (Dilli, 2007; Lajeunesse, 2004). **These additives can gradually be leached out into environment throughout its life cycle in response to light or heat** (Ahmad et al., 2012; Cheng et al., 2010; Whitt et al., 2012). Global annual release of additives from common consumer plastics such as PE, PS, PET and PVC into marine environments was estimated to be between 35 and 917 tons, of which most were derived from plasticized PVC (Suhrhoff et al., 2016). After and during disposal of PBW or PPW, their environmental impact needs to be concerned as they also have long term health effects indirectly (Al-Qutob et al., 2014; Huerta-Pujol et al., 2010). However, the information is still insufficient on metal contents in PB along with appropriate treatment technology (Nakashima et al., 2011). It is very important to monitor and regulate HM along with other additives contents in PB (Ramaswamy and Sharma, 2011). **PB is non–biodegradable in natural way in aerobic or anaerobic or semi-aerobic environmen**t (Williamson, 2003; Kang and Zhu, 2014). Due to several uncaring factors, globally around 96% of the daily generated PBWs directly go to the landfills or dumpsites, and a tremendous quantity of it is disposed of illegally (UNEP, 2005). They can last in landfill – an anaerobic environment for hundreds of years. Even after hundreds of years, they will merely photo degrade, not completely. Thereby, collection and disposal of PBWs has become a global challenge of late (Clapp and Swanston, 2009). Compared to other plastic products, very little works have been carried out on HM contents in PB. The contents of Pb and Cr in marine PE litters in Japan were estimated as 45 and 14 mg/kg, respectively. Here, the majority of the litters were found to contain HMs below 10 mg/kg, and few were found to exceed standard limits (Nakashima et al., 2011). On the other hands, high levels of HMs were detected in some PE rubbish and supermarket bags, where Cr and Pb in the rubbish bags were found to

exceed standards. Other metals were identified within standards. Furthermore, there was no similarity among PBs of different polymer types and colors in case of metal contents (Huerta-Pujol et al., 2010). **Metals (pollutants) are added to PB as stabilizers and pigments, and the HM contents in different PBs also vary based on region**s (Al-Qutob et al., 2014; Kumar and Pastore, 2007). When these PBs are disposed of in dumpsites, they might contaminate water bodies, soil and plants in surrounding areas by spreading toxic metals and chemicals (Sakurai et al., 2006). On the other hand, PBWs have high heating value ranging from 18 to 48 MJ/kg which are almost similar to the conventional fuels, indicating energy recovery potential. Through thermal treatment such locked energy can be recovered along with reducing CO2 emission and HM leaching (Alam, 2015; Khan and Khan, 2015). Furthermore, attention also needs to be concerned that, during thermal treatment of PBWs through different methods – incineration, pyrolysis and gasification (Ahmad et al., 2012; Olafisoye et al., 2013; Zhou et al., 2014), the metals might transfer into flue gas and cause potential air pollution (Wang et al., 2014; Wagner and Caraballo, 1997; Wey et al., 1998). The absence of any known study on characteristics, especially elemental compositions, HM contents, leaching behaviours, thermal decomposition rate and energy contents in PB, has coupled the problems. Thereby, the study was conducted to identify the characteristics of commonly used PBs and their potential environmental hazards. Section snippets Sampling and preparation Total 33 PB samples were collected from several super markets in Shanghai, China based on used polymer types, colors and intended uses (Table 1). All the selected samples were repeated and also triplicated when the first obtained values were not close. Here, samples were chosen to reflect a broad range of used polymer matrix and colors that may represent overall scenarios of daily consumed bags. Furthermore, intended usage was considered during sample collection to identify potential risks Elemental compositions of plastic bag Elemental compositions of PB influence in pollutants release and energy recovery efficiency. From (Fig. 1), it is seen that different polymer made of bags contain the highest amount of C; that is, >75.68% in PE, >77.86% in HDPE, >74.70% in LDPE, >35.95% in PVC, >84.66% in PP, >89.87% in PS and >75.42% in PA bags, respectively. The comparatively lower quantity of H; that is, <24.14% in PE, <22.88% in HDPE, <25.16% in LDPE, <11.25% in PVC, <12.91% in PP, <7.53% in PS and <13.17% in PA bags; while Conclusion The proper consciousness about PB is very important to minimize environmental and health problems related to discarded PBs. **Being non-biodegradable, PBs block water flow and make unfertile agricultural soil by inhibiting pass of nutrients in soil. Environmental composition and additives in PB play significant roles in pollution emissions. High Cl content in PVC bag is potential source of toxic chemical release such as dioxin and furan.**

Turtles

Plastic debris threatens turtles

Happy Turtle Straw, June 20, 2023, https://www.linkedin.com/pulse/wwf-urges-immediate-global-ban-single-use-plastics/, WWF Urges Immediate Global Ban on Single-Use Plastics: Paving the Way to a Plastic-Free Future

Turtles, being highly susceptible to the dangers of plastic pollution, face grave challenges while traversing through contaminated waters. Ingestion of plastic debris, such as mistaken consumption of plastic bags and other fragments resembling their natural prey, has dire consequences for turtles' health, often resulting in severe ailments and mortality. Additionally, the entanglement of turtles in abandoned fishing gear, known as ghost nets, contributes to their plight. These **entanglements can inflict severe injuries, impeding turtles' locomotion and hampering their foraging capabilities.** As prominent and vulnerable constituents of marine ecosystems, turtles serve as poignant indicators of the urgent need to address the global predicament of plastic pollution. Turtles are a Keystone species, sustaining entire ecosystems SeaTurtles.org, no date, https://www.seeturtles.org/why-are-sea-turtles-important#:~:text=Healthy%20oceans%20need%20sea%20turtles,and%20fauna%20in%20different%20ways. Healthy oceans need sea turtles. **Sea turtles are a "keystone species", which means they are an important part of their environment and influence other species around them. If a keystone species is removed from a habitat, the natural order can be disrupted, which impacts other wildlife and fauna in different ways. Five Reasons Sea Turtles Are Really Important Turtles help control their prey**. For example, leatherbacks help manage the amount jellyfish in the ocean, and hawksbills help reefs by eating sponges that compete with them for space. **Turtle nesting helps beaches.** The nutrients left behind by eggs and hatchlings that don't survive provide an important source for coastal vegetation. **Hatchlings are an important source of food for many animals.** Birds, fish, and mammals like raccoons rely on plentiful hatchlings to survive during nesting season. They are important for coastal economies and native communities. Many places rely on turtle watching or diving for jobs and income and a number of indigenous communities revere sea turtles as part of their cultures. Plus there are emotional and psychological benefits to seeing a sea turtle in the wild. **Green turtles grazing on seagrass is an important way to keep seagrass beds healthy. Healthy seagrass benefits many species and stores carbon.** JOIN A TURTLE CONSERVATION TRIP **Coral Reefs** Coral reefs are home to hawksbills, which specialize in eating a handful of species of sea sponges. This diet allows less common types of sponges to grow, which increases the variety of life on the reef (also known as "biodiversity"). Without hawksbills, sponges can overgrow and suffocate slow-growing corals causing them to die. As reefs become more and more threatened by climate change and other impacts, the role of the hawksbill on the reef is even more vital. Learn how you can help protect hawksbills through our Too Rare To Wear campaign and sign our pledge to avoid turtleshell. **Beaches** Sea turtles also have a positive influence out of the water. Nesting sea turtles help beaches by depositing their eggs in the sand. Eggshells and unhatched eggs left behind provide important nutrients that nourish dune vegetation such as beach grasses, which stabilize dunes and help to prevent coastal erosion. **Turtle predators** Sea turtles are prey for other animals at all stages of life. Hatchlings are prey for birds, crabs, land mammals, and fish. Adult sea turtles are prey for apex predators like sharks and orcas. On some beaches in Costa Rica, adult female sea turtles are even prey for jaguars that prowl nesting beaches at night, making sea turtles an integral part of food webs on land AND in the ocean! **Turtle prey** Different species of sea turtles feed on different things, though most of them like jellyfish. Leatherback sea turtles specialize in eating jellyfish which keeps jellyfish populations in check. If leatherbacks were to disappear, jellyfish populations would explode. Jellyfish prey upon larval fish so without leatherbacks; without these larval fish there would be no fish in the sea! Again, it's all about balance. Adult green sea turtles primarily eat sea grasses, acting as aquatic lawnmowers which help keep seagrass beds healthy (like mowing your lawn!). Seagrass beds which are found in shallow marine waters, provide habitat, food, and protected nursery areas for many fish species, enabling them to take shelter from predators until they are larger. Healthy seagrass beds also help to stabilize the ocean bottom which helps decrease erosion from wave action and storms. Helping others Sea turtles provide habitat for an array of "aquatic hitchhikers" like barnacles and other small crustaceans, remoras, algae, and diatoms. **Because sea turtles undergo long migrations, they help to transport these species. They also act as sort of an umbrella for fish that use them as shelter from predators.** When at the sea surface to breathe or rest, sea turtles also sometimes provide a resting spot for seabirds to land on - sort of like a reptilian aircraft carrier! Importance to humans **Sea turtles play an important cultural role for many coastal communities around the world.**

Many indigenous cultures revere them or consider them ancestors. They are also an important source of income for coastal residents through turtle-watching ecotourism. Research has shown that sea turtle ecotourism can generate three times the income than by selling sea turtle parts (eggs, meat, & shells), making them worth more alive than dead. Aside from their important ecological role, sea turtles are some of the most charismatic animals on the planet! It seems that everyone loves sea turtles. They are a source of awe and inspiration; watching them haul themselves up a beach to nest, swim through a reef, or watching hatchlings charge to the sea are truly magical and unforgettable experiences. Without sea turtles our blue planet wouldn't be complete.

Forida State University News, June 7, 2021, Sea Turtle Week: FSU marine biologist available to comment on importance of these keystone species, https://news.fsu.edu/news/expert-pitches/2021/06/07/sea-turtle-week-fsu-marine-biologist-available-to-comment-on-importance-of-these-keystone-species/

Sea turtles have existed on Earth for more than 100 million years. Mariana Fuentes, associate professor in the Department of Earth, Ocean and Atmospheric Science But today, **most species of these oceangoing reptiles are threatened or endangered. Scientists and resource managers are working to better understand and manage their populations, and they're using work like that led by Mariana Fuentes,** an associate professor in the Department of Earth, Ocean and Atmospheric Science at Florida State University. Fuentes specializes in the study of these charismatic creatures. She has published more than 70 peer-reviewed articles in high-impact journals that have guided the management and conservation of sea urtles globally, and she has shared her expertise in the Miami Herald, Hakai Magazine and elsewhere. **"Sea turtles are 'keystone species' that play a crucial role in the ocean ecosystem," she said. "They help keep beach dunes, seafloor habitat and coral reefs healthy, keep jellyfish populations in check and more. They're also fascinating animals. We're still learning more about them and how to conserve them for the future."**

And it's not just the turtles

Dirk Anxos at al, 2017, School for Resource and Environmental Studies, Dalhousie University, Halifax, NS, Canada, International policies to reduce plastic marine pollution from single-use plastics (plastic bags and microbeads): A review, Marine Pollution Bulletin, Marine Pollution Bulletin, Volume 118, Issues 1–2, 15 May 2017, Pages 17-26

Plastics are now ubiquitous in the marine environment, and **urgent action is required to mitigate this worsening** trend (Rios net al., 2007, Rochman et al., 2015b). In 2010, an estimated 4.8–12.7 Mt of plastics entered the oceans globally (Jambeck et al., 2015). A 2014 study (from six years of research by the 5 Gyres Institute) estimated that 5.25 trillion plastic particles (weighing 269,000 tons) are floating in the sea. Although the contribution of plastics in man-made garbage is roughly 10% by mass (Barnes et al., 2009), it is estimated that **plastic debris accounts for 60–80% of marine litte**r (Derraik, 2002), reaching 90–95% in some areas (Walker et al., 1997, Walker et al., 2006, Surhoff and Scholz-Böttcher, 2016). Due to its durability, **the lifespan of plastic is estimated to be hundreds to thousands of years** (Wang et al., 2016). In 2014, UNEP announced concern over the threat of widespread plastic waste to marine life. Plastics have been reported as a problem in the marine environment since the 1970s (Carpenter and Smith, 1972, Colton et al., 1974). However, only recently has the issue of plastic pollution in marine and freshwater environments been identified as a global problem (Andrady, 2011, Eriksen et al., 2013, Vegter et al., 2014, Eerkes-Medrano et al., 2015, Perkins, 2015). **Consequently, marine plastic pollution has become a significant environmental concern for governments, scientists, non-governmental organizations, and members of the public worldwid**e (Seltenrich, 2015). Entanglement of species by marine debris can cause starvation, suffocation, laceration, infection, reduced reproductive success and mortality (Katsanevakis, 2008, Baulch and Perry, 2014, UNEP and NOAA, 2015). Previous studies focused on entanglement of marine mammals and other species in net fragment litter or 'ghost fishing gear' (Walker and Taylor, 1996, Laist, 1997, Clapham et al., 1999, Bullimore et al., 2001, Eriksson and Burton, 2003). For example, Antarctic fur seals are commonly entangled in plastic marine debris (Walker et al., 1997, Waluda and Staniland, 2013). Ingestion of plastics by birds (Moser and Lee, 1992, Robards et al., 1997, Cadee, 2002, Mallory, 2008) and turtles (Mascarenhas et al., 2004, Bugoni et al., 2001, Tomas et al., 2002) have also been widely reported. Plastic bags have been identified, among macroplastic litter items, most harmful to marine biota (Besseling et al., 2015, Hardesty et al., 2015), but can also have impacts beyond marine species. The existence of plastics in the marine environment presents a number of challenges that hinder economic development. Stranded plastic along shorelines creates an aesthetic issue, which has negative impacts for tourism (Jang et al., 2014). Economic losses are associated with reduced tourism revenues, negative impacts on recreational activities, vessel damage, impairment in

marine environments, invasive species transport and damage to public health (Hardesty et al., 2015). Stranded shoreline plastic also negatively impacts shipping, energy production, fishing and aquaculture resources (Cole et al., 2011, Sivan, 2011). A conservative estimate of the overall economic impact of plastics to marine ecosystems is ~$13 billion US/year (Raynaud, 2014), although the true environmental costs are difficult to monetarize. **However, reported impacts of marine plastic debris on marine life include nearly 700 species, from tiny zooplankton to the largest whales, including fish destined for human consumption. Of the hundreds of marine species impacted, 17% are IUCN red listed species and at least 10% have ingested plastics (Gall and Thompson, 2015).**

Health of marine ecosystems critical to global ecosystems

Kunich 5—Professor of Law @ Roger Williams University School of Law [John Charles Kunich, "ARTICLE: Losing Nemo: The Mass Extinction Now Threatening the World's Ocean Hotspots," Columbia Journal of Environmental Law, 2005, 30 Colum. J. Envtl. L. 1]

On the other hand, there is an **unimaginable cost** from failing to preserve the marine hotspots if they contain numerous species of high value at great risk of extinction. We could cost ourselves and our posterity untold advancements in medicine, therapies, genetic resources, nutrients, ecosystem services, and other areas, including perhaps a cure to a global health threat that might not materialize until centuries from now...**truly a "grave error" of the first order**. [*128] But if we sit on the sidelines and fail to invest in hotspots preservation, and we "get lucky" (few species, low value, small extinction risk), our only gain is in the form of saving the money and effort we could have spent on the hotspots. Even if this amounts to several billion dollars a year, it is a small benefit compared to the incalculably catastrophic losses we could suffer if we guess wrong in betting on the inaction option.

The Decision Matrix actually under-represents the extent to which the rational decision is to invest in hotspots preservation. Because the Decision Matrix, in tabular form, devotes equal space to each of the sixteen possible combinations of extreme variable values, it can mislead readers into thinking that each of the sixteen outcomes is equally probable. This is most emphatically not the case. Some of these results are far more probable than others. This problem of apparent equality of disparate results is of the same type as a chart that depicts a person's chances of being fatally injured by a plummeting comet on the way home from work on any given day. There are only two possible results in such a table (survives another day, or killed by meteor), and they would occupy an equal amount of tabular space on the printed page, but the probability of the former outcome is, thankfully, much higher than the likelihood of the latter tragic event.

As explained in this Article, it is much more likely that there are numerous, even millions, of unidentified species currently living in the marine hotspots than that these hotspots are really not centers of profuse biodiversity. It is also very probable that the **extinction threat in our oceans is real, and significant**, given what we know about the horrific effects wrought on coral reefs and other known marine population centers by overfishing, pollution, sedimentation, and other human-made stressors. n525 Recent discoveries have revealed very high rates of endemism in small areas such as seamounts, which are extremely vulnerable to trawl damage. n526 Even in the deep ocean areas, there is evidence that new technologies are making it both a possibility and a reality to exploit the previously unexploitable biodiversity in these waters via [*129] demersal fishing/trawling, to devastating effect. n527 Only a truly Orwellian brand of doublethink could label as progress the development of fishing methods that do to the benthic habitats what modern clearcutting has done to so many forests, only on a scale 150 times as severe, but it is this "progress" that has brought mass extinction to the seas. n528 However, there is also the positive side, in light of the large numbers of marine species and habitat types, including life forms adapted to extraordinary niches such as hydrothermal vents and the abyss. That is, it would be surprising if there were not highly valuable genetic resources, natural medicines, potential sources of food, and other boons waiting to be discovered there.

Therefore, the results that are linked to high, rather than low, values of each of the three variables are far more probable than the converse outcomes. In terms of **probabilities**, it is much more likely that either a "first order grave error" or "first order jackpot" will occur than a "lucky wager" or an "unused insurance" result. In fact, all of the combinations with either two or three "high" values of the variables are significantly more probable that any of the combinations with two or three "low" variable values. This means that the tilt in favor of betting on the hotspots is much more pronounced than is apparent from a cursory glance at the Decision Matrix. **The extreme results are far likelier to fall in favor of hotspots preservation than the opposite.**

Terminal Impacts

Biodiversity Impacts

Biodiversity collapse causes extinction.

Rodolfo **Dirzo 22**. Associate Dean, Doerr School of Sustainability. Professor of Earth System Science, Stanford University. Senior Fellow, Woods Institute for the Environment. Gerardo Ceballos, Senior Researcher, Institute of Ecology, Universidad Nacional Autónoma de México. Paul R. Ehrlich, Bing Professor Emeritus of Population Studies, Department of Biology, Stanford University. President, Stanford's Center for Conservation Biology. "Circling the drain: the extinction crisis and the future of humanity." Philosophical Transactions of the Royal Society B: Biological Sciences. 6-27-2022. https://doi.org/10.1098/rstb.2021.0378

Civilization, and even the **fate of our species**, is **utterly dependent** on proper global **ecosystem functioning**. Ecosystem functioning, including primary productivity, the **biogeochemical cycles**, and the network of trophic mutualistic and antagonistic species interactions that compose the **food chains**, is the **fabric of life**—a fabric that is translated by humans as ecosystem services (e.g. [28,39]). The **vast literature** on the **biodiversity**–ecosystem function relationship and the significance thereof in terms of **services** to humanity has focused its attention on the consequences of changes in the diversity of (mostly) plant species or genetic variants on four major types of ecological processes: (i) provisioning, such as **crop yield**, fodder yield, wood production, medicines and medicine models; (ii) regulating, such as biocontrol, pollination and **nutrient** cycling; (iii) support services such as primary productivity; and (iv) cultural services, such as inspiration, and education (see a classic review in [40]; also [39]). Biodiversity–ecosystem function studies focused on animals are more limited, but some reviews make such relationship evident too, including services such as crop **pollination** and **pest control**, **seed** dispersal, litter decomposition, **carbon** cycling, carrion and dung removal, **soil erosion** control, animal forage provisioning, and **zoonosis** risk regulation (see reviews in [30,41]). What all this implies, in practical terms, is that the millions of years of plant and phytoplankton cumulative photosynthesis; the tens of millions of soil organisms that **transform** dirt into fertile soil, decompose the bodies of dead organisms and contribute to **nutrient recycling**; the wild and domesticated plants, animals (both terrestrial and aquatic) and fungi that for millennia have fed and currently feed the human population (i.e. we all eat biodiversity); the communities of **animals** that maintain plant reproduction and **genetic diversity**, as well as those animals that regulate the abundance of **disease hosts** and **vectors**; the thousands of **plants**, **fungi**, other **microorganisms** and **animals** that have provided and continue to provide **medicine** or medicine models; the **physical** protection due to **ecosystem 'structures**' such as mangroves and coral reefs from **extreme weather** events; and the increasingly appreciated significance of the inspirational, educational and emotional benefit derived from our contact with biodiversity constitute the **life-support** systems for **humanity** (see a recent review in [18]). In a different perspective, **ecosystem services** have been examined in **economic terms** (see a major review in [42]), and several researchers have attempted to calculate the **value** of **nature's services** in a variety of ways. Among these would be the cost of infrastructure that needs to be developed to substitute for the services of, for example, protective coastal ecosystems, and the price of water treatment plants that can play the role of wetlands in filtering contaminants [43]. Similarly, one estimate is that without mangroves flood damage in tropical coastal areas would increase by more than 16% or $US82 billion annually. However, we emphasize that the **fundamental value** of ecosystems in the intersection culture–ecosystem functioning lies in that the value of our life-supporting systems 'is essentially **incalculable**' [18]. This short review makes it evident that **humanity cannot survive** in the **absence** of **biodiversity** and **ecosystem functioning**, which, as we have discussed above, we are **increasingly degrading**. Furthermore, the prospect of Homo sapiens being present when the normal recovery times following a mass extinction occur is simply unrealistic. Finally, it is imperative to appreciate that all these aspects of human **dependence** on biodiversity—the intersection between human culture and ecosystem services—occur at the **level** of the populations of the myriad **species** and functional groups present where human populations are present. Therefore, it is **crucial** that we examine the impact of the human enterprise on the myriad **populations** of plants, animals, fungi and microorganisms.

Biodiversity loss causes extinction.

Economist 21. "Loss of biodiversity poses as great a risk to humanity as climate change." 6-15-2021. https://www.economist.com/technology-quarterly/2021/06/15/loss-of-biodiversity-poses-as-great-a-risk-to-humanity-as-climate-change

Human societies **depend** on **healthy ecosystems**. People **consume** their **products** in the shape of fish, meat, crops, timber and fibres such as cotton and silk. Medicines may be **directly harvested** from the natural world or **inspired** by molecules and mechanisms found within it. The ecosystems that **crops** depend upon are

regulated by **living things**. Through photosynthesis, trees and other plants **take in carbon** and **pump out oxygen**. In doing so they remove roughly 11bn tonnes of carbon dioxide from the atmosphere each year, equivalent to 27% of what human industry and agriculture emits (the oceans absorb a further 10bn tonnes). The **services** that ecosystems provide to humanity **depend**, in turn, on there being a **diversity** of living things. More than **75%** of global food-crop types, including coffee, cocoa and almonds, are **pollinated** by **animals**. The **complex web** underpinning every **food chain** and **ecosystem** means that the **narrow range** of species that humans **eat** and exploit **cannot be sustained** without the existence of a **much greater diversity** of **animals**, **plants** and **bacteria**. More diverse forests **store more carbon** than monocultures. Skipjack tuna makes up roughly half of the global tuna catch for human consumption. As young animals, they eat zooplankton, which is to say very small floating animals like tunicates, ctenophores and small crustaceans as well as the larvae of larger animals. As adults, they eat smaller fish, squid and crustaceans. To conserve the skipjack, all this diversity in its food chain must also be conserved. Since the 19**90s**, alarmed by studies showing rapid declines in animal and plant species around the globe, ecologists have talked of an **impending mass extinction**. It would be the sixth in the Earth's history, but one unlike any that has come before. Surveys show that the loss of biodiversity is the result of a **combination of factors**: climate change, pollution, human exploitation of land, sea, plants and animals, and the displacement of some species into new territories where they play havoc with existing ecosystems. Uniquely in Earth's history, **each of these** drivers of ecological change is caused by a single species: **Homo sapiens**. When ipbes (the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, similar to the Intergovernmental Panel on Climate Change) published its assessment of the state of global biodiversity in 2019, it offered a sobering picture. Roughly **1m** animal and plant **species** were deemed to be at risk of **extinction**, more than at any other point in human history. These included **many** that are used in **farming**. At least 9% of the 6,200 breeds of domesticated mammals that humans eat, or use to produce food, had become extinct by 2016, and at least 1,000 more are threatened. More than one-third of continental land area and nearly three-quarters of freshwater resources are used to produce crops or livestock, but environmental degradation has damaged the land's ability to support these activities. And one-third of marine fish stocks were being unsustainably exploited in 2015. The **biod**iversity **crisis** poses **as great a risk** to human societies as **climate change**. Yet it has a fraction of the public profile. In part that is because the loss of biodiversity cannot be **neatly quantified**, as climate change can, into parts per million of carbon dioxide, or degrees above pre-industrial average temperatures. And the webs that link species within and across ecosystems are **even more complex** than the processes that drive climate change.

Biod is the root of every global crisis

UNSD 19 (United Nations Sustainable Development, council dedicated to examining the impact of global development, with the best experts around the globe, exact date unknown but year is 2019, "UN Report: Nature's Dangerous Decline 'Unprecedented'; Species Extinction Rates 'Accelerating'," United Nations Sustainable Development – UNSD, https://www.un.org/sustainabledevelopment/blog/2019/05/nature-decline-unprecedented-report/, accessed 9-29-2022)

Despite progress to conserve nature and implement policies, the Report also finds that global goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond may only be achieved through transformative changes across economic, social, political and technological factors. With good progress on components of only four of the 20 Aichi Biodiversity Targets, it is likely that most will be missed by the 2020 deadline. Current negative trends in biodiversity and ecosystems will undermine progress towards 80% (35 out of 44) of the assessed targets of the Sustainable Development Goals, related to poverty, hunger, health, water, cities, climate, oceans and land (SDGs 1, 2, 3, 6, 11, 13, 14 and 15). Loss of biodiversity is therefore shown to be not **only** an environmental issue, but also a developmental, **economic**, **security**, social and moral issue as well.

Biod turns war

WHO 15 (World Health Organization, world leader in securing health for all global citizens, 6-3-2015, "Biodiversity and Health," World Health Organization – WHO, https://www.who.int/news-room/fact-sheets/detail/biodiversity-and-health, accessed 9-29-2022)

What does biodiversity mean for human health?

People depend on biodiversity in their daily lives, in ways that are not always apparent or appreciated. Human health ultimately depends upon ecosystem products and services (such as availability of fresh water, food and fuel sources) which are requisite for good human health and productive livelihoods. Biodiversity loss can have

significant direct human health impacts if ecosystem services are no longer adequate to meet social needs. Indirectly, changes in ecosystem services affect livelihoods, income, local migration and, on occasion, may even **cause** or **exacerbate** political conflict.
Additionally, biological diversity of microorganisms, flora and fauna provides extensive benefits for biological, health, and pharmacological sciences. Significant medical and pharmacological discoveries are made through greater understanding of the earth's biodiversity. Loss in biodiversity may limit discovery of potential treatments for many diseases and health problems.

Biod loss causes human extinction
Joe **McCarthy 18**, a Staff Writer at Global Citizen, Nov 8 2018, "Humans Could Face Extinction if We Don't Protect Biodiversity: UN", Global Citizen, https://www.globalcitizen.org/en/content/biodiversity-loss-human-extinction/
As the sixth mass extinction event accelerates around the world, engulfing thousands of animal and plant species, **humans risk facing a similar fate** unless drastic interventions are made, according to Cristiana Pașca Palmer, the United Nations biodiversity chief, who recently spoke with the Guardian.
Palmer said that within the next two years, countries have to develop an ambitious plan to conserve land, protect animals, and stop practices that are harming wildlife. This effort is equally as urgent as the Paris climate agreement's goal of mitigating climate change, she said.
"The loss of biodiversity is a silent killer," she told the Guardian. "It's different from climate change, where people feel the impact in everyday life. With biodiversity, it is not so clear but by the time you feel what is happening, it may be too late."
Next month, countries will meet in Sharm el Sheikh, Egypt, to begin mapping out what such a plan would like. Palmer hopes that a final version will be formalized in Beijing in 2020.
If a binding global treaty fails to materialize, then humanity faces an uncertain future, she said. Past efforts to stop the loss of biodiversity have not proved successful, according to the Guardian.
In recent years, evidence of this staggering loss has begun accumulating.
Wild animal populations have declined by 60% since 1970, more than 26,000 plants and animals are close to extinction, nearly two-thirds of the world's wetlands and half of all rainforests have been destroyed, more than 87% of the world's ocean area is dying, and the planet needs an estimated 5 million years to recover from the biodiversity loss it has already sustained.
"We are sleepwalking towards the edge of a cliff," Mike Barrett, executive director of science and conservation at WWF, recently told the Guardian. "If there was a 60% decline in the human population, that would be equivalent to emptying North America, South America, Africa, Europe, China, and Oceania. That is the scale of what we have done."
"This is far more than just being about losing the wonders of nature, desperately sad though that is," he said. "This is actually now jeopardising the future of people. Nature is not a 'nice to have' — it is our **life-support system**."
The benefits of biodiversity are hard to overstate. The **food chain**, **climate systems**, atmospheric conditions, **natural resources**, and much more depend on the delicately structured interactions of ecosystems around the world.
The truly wild places in the world, meanwhile, are crucial to generating, cleaning, and distributing water around the world, and could help to **mitigate the looming water crisis**. These landscapes and marine environments also clean the air and act as **carbon sinks**, stabilize the global environment, and protect countries from **natural disasters**.
In addition to climate change, the biggest threats to biodiversity are deforestation, agriculture, over-development, and **industrial pollution**.
While Palmer sounded an urgent alarm bell while speaking with the Guardian, she's hopeful that countries will recognize the threat of biodiversity loss and begin to take action.
The UN is calling for at least 30% of all land and 15% of all marine environments to be protected by 2030 and for targets to be lifted in the following years.
"Things are moving. There is a lot of goodwill," Palmer said. "We should be aware of the dangers but not paralysed by inaction. It's still in our hands but the window for action is narrowing. We need higher levels of political and citizen will to support nature."

Biodiversity key to human survival

Daisy Dunne, June 16, 2022, Explainer: Can climate change and biodiversity loss be tackled together?, https://www.carbonbrief.org/explainer-can-climate-change-and-biodiversity-loss-be-tackled-together/

The loss of biodiversity across the world is also having a major impact on people. While many people associate the term "biodiversity" with iconic species and tropical forests, it actually covers much more than this, explains Dr Nathalie Pettorelli, a senior research fellow at the Zoological Society of London's Institute of Zoology. She tells Carbon Brief: "**Biodiversity is everything that defines our living world. It's not only species – it's ecosystems, it's habitats, it's the genetic make-up of individuals**. It's how communities assemble to be something bigger than the sum of their parts." ***The variety of living things found on Earth is crucial to human survival,*** explains Dr Charlie Outhwaite, a postdoctoral research associate at the Centre for Biodiversity and Environment Research at University College London. She tells Carbon Brief: "It's not just nice to have biodiversity on the planet, it also provides a lot of important things. Thinking about the food system, **biodiversity is important for the pollination of crops, for maintaining nutrients in the soil and for maintaining water quality that we need to water crops. If we lose biodiversity, we lose a lot of the stuff we rely on as people."**

Ocean Ecosystem Impacts

Declining ocean health destroys global growth.

World Bank 22, *World Bank is an international organization dedicated to providing financing, advice, and research to developing nations to aid their economic advancement; (April 6th, 2022, "Blue Economy", https://www.worldbank.org/en/topic/oceans-fisheries-and-coastal-economies)

Healthy oceans provide jobs and food, **sustain** economic **growth**, regulate the climate, and support the well-being of coastal communities.

Billions of people worldwide —especially the world's poorest— rely on **healthy oceans** as a source of **jobs** and **food**, underscoring the urgent need to sustainably use, manage and protect this natural resource. According to the OECD, oceans contribute $1.5 trillion annually in value-added to the overall economy and this number could reach **$3 trillion** by 2030.

The FAO estimates that around 60 million people are employed worldwide in fishing (39 million) and fish farming (20.5 million). Most are in developing countries, and are small-scale, artisanal fishers and fish farmers. In 2018, global fisheries and aquaculture amounted to approximately 179 million tons, with a "first sale" value estimated at US$401 billion, generating over US$164 billion in exports, including 60 percent from developing countries. In 2017, fish provided about 3.3 billion people with almost 20 percent of their average intake of animal protein, with an even higher proportion in many poor countries (FAO 2020).

Healthy oceans and coastal ecosystems are **crucial** for **economic growth** and food production, but they are also essential contributors to global efforts to mitigate climate change. "Blue carbon" sinks such as mangroves tidal marshes, and seagrass meadows sequester and store more carbon per unit area than terrestrial forests. They also protect coastal communities from floods and storms. In turn, warming oceans and atmospheric carbon are causing ocean acidification, which threatens the balance and productivity of the oceans.

And yet, while ocean resources boost growth and wealth, they have been **brought** to the **brink** from **anthropogenic impacts**. Fish stocks managed beyond biologically sustainable levels rose from 10 percent in 1974 to 34.2 percent in 2017, while in the same year approximately 60 percent of fish stocks were fished at maximally sustainable levels (fully exploited) (FAO 2020). Globally, fish stocks are significantly affected by illegal, unregulated and unreported (IUU) fishing, though the exact magnitude of the matter is difficult to assess accurately. According to the World Bank's Sunken Billions report, more than **US$80 billion** in **foregone** economic **benefits** are lost every year due to **overfishing** and **overcapacity**. In addition, critical fish habitats are also under pressure from pollution, coastal development, and destructive fishing practices that undermine fish stock recovery.

Improved fisheries management, investment in sustainable aquaculture and protection of key habitats could help **restore** the **productivity** of oceans and generate benefits worth **billions** of **dollars** in developing countries, while ensuring future growth, food security and jobs for coastal communities.

Oceans are also threatened by marine pollution from multiple sources, mostly land-based but also from activities at sea. Plastics are one of the most visible part of this pollution; and microplastics have been found around the world, in the food chain, air, oceans, rainwater, and ice in the Arctic. Plastic pollution hurts **economies**, ecosystems, food security, and evidence is rising on potential impacts on human health, including presence of microplastics in our blood. Without proper actions along the value chain, the total cost to governments of managing plastic waste between 2021 and 2040 will by some estimates reach **US$670 billion**, and the cost of inaction can be particularly **high** for **businesses** (estimated at US$100 billion annual financial risk, by 2040). Addressing plastic pollution requires a combination of solutions that are complex, multi-sectoral, and country specific. It requires putting a stop to leakages by improving solid waste management, building a more circular economy for public and private sector (including designing out waste and pollution, developing alternatives to single-use plastics or redesigning them to make them more recyclable, promoting the development of new industry sectors such as reuse/remanufacture, and developing more financially sustainable recycling markets), and restoring ecosystems through clean-up.

Collapse of ocean biodiversity causes global extinction

Roberts, 2015 (Callum, professor of marine conservation at the University of York, "Our seas are being degraded, fish are dying – but humanity is threatened too," 9/19/15, http://www.theguardian.com/environment/2015/sep/20/fish-are-dying-but-human-life-is-threatened-too)

When life is brought low, there are unwanted and **unanticipated knock-on effects**. Predators like tuna, sharks, porpoises and whales are not mere embellishments, nice to have but not critical if lost. They once regulated the abundance of their prey and weeded out **diseased** and parasite-laden **creatures** before populations became seriously affected. They were important in **cycling nutrients** through ocean ecosystems, shuttling them from the depths to the surface where sunshine and plants could turn them into the energy that

feeds all life in the sea. Seabed life, those waving fields of invertebrates swept aside by trawls, – **captured carbon and sequestered it** into the sediments. They kept the water clean, boosting photosynthesis, and removed pathogens and pollutants we put in the sea. So if you are wondering whether it matters that life in the sea has gone down, **the answer is yes**. In the long term, **it is a matter of life and death to all of us**. The oceans are vast. Once we thought they were too big to suffer anything other than minor damage at our hands. We know that is no longer true. Human influence reaches **every part of the ocean**, from the distant high seas to the deepest abyss. What we are just beginning to understand is that **they are too big for us to let them fail**. The oceans have **colossal importance** in keeping our planet **habitable**. **If they fail, so do we**.

Craig 3 - Attorneys' Title Professor of Law and Associate Dean for Environmental Programs at Florida State University

(Robin Kundis Craig, "ARTICLE: Taking Steps Toward Marine Wilderness Protection? Fishing and Coral Reef Marine Reserves in Florida and Hawaii," McGeorge Law Review, Winter 2003, 34 McGeorge L. Rev. 155)

Biodiversity and ecosystem function arguments for conserving marine ecosystems also exist, just as they do for terrestrial ecosystems, but these arguments have thus far rarely been raised in political debates. For example, besides significant tourism values - the most economically valuable ecosystem service coral reefs provide, worldwide - coral reefs protect against storms and dampen other environmental fluctuations, services worth more than ten times the reefs' value for food production. n856 Waste treatment is another significant, non-extractive ecosystem function that intact coral reef ecosystems provide. n857 More generally, "ocean ecosystems play a major role in the global geochemical cycling of all the elements that represent the **basic building blocks** of living organisms, carbon, nitrogen, oxygen, phosphorus, and sulfur, as well as other less abundant but necessary elements." n858 In a very real and direct sense, therefore, human degradation of marine ecosystems **impairs the planet's ability to support life**. Maintaining biodiversity is often critical to maintaining the functions of marine ecosystems. Current evidence shows that, in general, an ecosystem's ability to keep functioning in the face of disturbance is strongly dependent on its biodiversity, "indicating that more diverse ecosystems are more stable." n859 Coral reef ecosystems are particularly dependent on their biodiversity. [*265] Most ecologists agree that the complexity of interactions and degree of interrelatedness among component species is higher on coral reefs than in any other marine environment. This implies that the ecosystem functioning that produces the most highly valued components is also complex and that many otherwise insignificant species have strong effects on sustaining the rest of the reef system. n860 Thus, maintaining and restoring the biodiversity of marine ecosystems is critical to maintaining and restoring the ecosystem services that they provide. Non-use biodiversity values for marine ecosystems have been calculated in the wake of marine disasters, like the Exxon Valdez oil spill in Alaska. n861 Similar calculations could derive preservation values for marine wilderness. However, economic value, or economic value equivalents, should not be "the sole or even primary justification for conservation of ocean ecosystems. Ethical arguments also have considerable force and merit." n862 At the forefront of such arguments should be a recognition of how little we know about the sea - and about the actual effect of human activities on marine ecosystems. The United States has traditionally failed to protect marine ecosystems because it was difficult to detect anthropogenic harm to the oceans, but we now know that such harm is occurring - even though we are not completely sure about causation or about how to fix every problem. Ecosystems like the NWHI coral reef ecosystem should inspire

Health Harms

Coastal Community Health

Plastics causes health problems for coastal communities

Courtney Lindwall, January 9, 2020, Single-Use Plastics 101, https://www.nrdc.org/stories/single-use-plastics-101#what

Plastic pollution—whether in our oceans**, piling up on our coastlines, or contributing to our climate crisis—impacts vulnerable communities first**. Even if plastic doesn't end up in the ocean, recycled plastic is often exported from high-income countries to developing countries to process. But the sheer amount of plastic waste inundates communities until they are drowning under thousands of tons of plastic trash. This is the case particularly in Southeast Asia, which has begun to import much of the plastic that used to go to China for recycling. **Not only does the waste destroy the land itself, but when plastic is incinerated (as is the case for unrecyclable plastic at some illegal facilities) its toxic fumes quickly become a health hazard for residents, leading to everything from skin rashes to cancer. Such is the case with many environmental crises: the worst effects are pushed onto overburdened communities with the fewest resources to fight back.**

Choking Death

People choke on the bags and die

Andrew Macintosh, Amelia Simpson and Teresa Neeman, 2018, Australia National University Law School, Regulating Plastic Shopping Bags in the Australian Capital Territory, ACT-Plastic-bag-ban-options-analysis.pdf

Possibly of greatest risk to users are the threats associated with suffocation and choking from plastic bags. Plastic bags are a suffocation and choking hazard, particularly to babies and young children. While a risk, the number of accidental deaths attributable to plastic bag suffocation or choking is likely to be very small. **Annually, around 110 people die in Australia from accidental suffocation and choking,** few of which are likely to involve plastic bags.31 Where suffocation and choking incidents occur, they are more likely to be a product of suicide attempts or assault. Consistent with this, an Italian study based on data from Milan for the period 1993 to 2013 found 101 cases of plastic bag suffocation, none of which were accidental.32 Almost all of the deaths (100) were due to suicide, with one homicide.

Answers to: Too Small of an Impact/Other Bad Environmental Behaviors

Ban leads to a consumer mindset shift

John White, December 16, 2020, The Truth About Plastic Bag Bans, https://www.clf.org/blog/the-truth-about-plastic-bag-bans/?gad_source=1&gclid=Cj0KCQiAkeSsBhDUARIsAK3tiefhJb0iF9iCj9hKXTpxuOUquz6LrW7rUJZByF5HNyEcWYVaBzjLPWgaAi1qEALw_wcB#gsc.tab=0,

Plastic is always the wrong option. It pollutes and is toxic throughout its production and use. What's more, it poses a deadly threat to marine and land-based life and must always be burned or buried, even after being recycled a few times. **Although bag bans won't solve the plastic crisis on their own, they do help to change plastic consumption habits and cause consumers and retailers to be more open to alternatives**. That's why CLF's Zero Waste Project is focused on passing bag bans, while also working to reduce plastic use overall – including any single-use plastics designed for disposal. Our Plastic Free New England campaign embodies that effort – to move towards a New England with no disposable plastic options. **Banning single-use plastic bags is a small but critical first step towards tackling the plastic crisis. The consideration and adoption of bag bans have already played a crucial role in drawing attention to the harms of plastic and has pushed people to examine their plastic consumption habits. That's why we're celebrating recent victories in Maine and Vermont, where bag bans were just signed into law. Vermont even went a step further, passing the most comprehensive plastic bill in the country. Not only did the state ban single-use bags, but also polystyrene. And plastic straws are now available only by request.** Now, we need Massachusetts, Rhode Island, Connecticut, and New Hampshire to follow suit. So let's get statewide bag bans passed, New England!

Answers to: Business Confidence/Economy

Turn – There is currently a patchwork of plastic bans that are disruptive to businesses, supply chains and manufacturing

Rhoads, 2020, March 20, Brendan Rhoads is a Research Analyst with Freedonia Custom Research, where he is responsible for both primary and secondary research activities, the analysis and synthesis of data, and the organization and delivery of internal and client project deliverables. He holds a bachelor's degree from Kent State University with a concentration in Economics and Data Analytics, Market Disruptions: Single-Use Plastic Bans and Supply Chain Considerations, https://www.freedoniagroup.com/blog/market-disruptions-single-use-plastic-bans-and-supply-chain-considerations

With a growing emphasis on sustainability among local governments, **laws restricting single-use plastic (SUP) products have become increasingly common. Various local governments i**n the United States **have banned single-use plastics** due to their detrimental effects on wildlife, climate conditions and human health. While plastic bag bans often receive the highest media attention nationwide, legislative action in some cases has extended to other plastic products such as straws, lids, utensils and other disposables. For example, Vermont plans to ban all single-use plastic products statewide by summer 2020. **The haphazard nature of localized single-use plastic bans is slowly forming a complex regulatory landscape for disposables across the US.** Particularly, supply chains must adapt to changing legislative actions, and such disruptions impact disposable manufacturers, foodservice distributors and businesses that work directly with consumers, such as restaurants and food establishments. **Manufacturers may have difficulty planning future production schedules while navigating changing regulatory developments and consumer responses.** Further, distributors may need to create new supply lines, incurring new direct monetary costs and a significant increase in time spent toward logistical planning. Finally, restaurants may need to consider new supplier relationships in response to localized variation in regulatory initiatives. While attention is often paid to the direct impact these bans have on consumer behavior, **the potential for supply chain disruptions is wide-ranging.**

Turn – people will shop within the same locations
inconsistency in bans now means people shop outside the local areas, increasing unemployment in bag ban areas. Now, the bag applies everywhere so people will shop in the same locations

Heather Caliendo, 2013, February 6, The economic effect of plastic bag bans. Plastics Today. https://www.plasticstoday.com/business/the-economic-effect-of-plastic-bag-bans

A study from the National Center for Policy Analysis claims that **a ban on plastic bags used by grocers and retailers can negatively impact sales in the ban area and increase sales among stores just outside the bag ban region.** The NCPA surveyed store managers in Los Angeles County, where a ban of thin-film bags took effect in July 2011. The group conducted a survey of 80 large stores such as supermarkets and variety shops affected by the ban. Additionally, each large store in unincorporated Los Angeles County was matched with one or two other stores within two miles and also in an incorporated area. The stores were matched in order to compare the effect of any displacement of commerce due to the ban. During a one-year period, before and after the ban**, the majority of stores surveyed in areas with a ban reported an overall average sales decline of nearly 6%. While the majority of respondents surveyed in areas without a ban reported an overall average sales growth of 9%.** 20120606-180220-g_0_0_0.jpgThe study also sought to determine if consumers changed their shopping behavior by increasing purchases at stores that could still offer plastic bags. Pamela Villarreal, NCPA senior fellow, told PlasticsToday it was interesting to find that consumers chose to shop at stores unaffected by the ban. "What we suspect is people that live in an area under a bag ban, but are in close proximity to an area without one, will 'vote with their feet,'" she said. "We often hear that people oppose plastic bags, but it sure does look like a lot of people do like them."

Speculative negative impacts of bans have been proven wrong

There are well-established legislative systems and procedures at the state and federal levels for developing new legislations. Also, for the states that have enacted statewide plastic bag bans, the significant impacts and lessons learned are expected to encourage and help other states develop similar legislations. Furthermore, the feedback from consumers and retailers in the states that have banned single-use plastic bags has been positive. For example, interviews with many retailers in Vermont suggest that the negative impacts of the plastic bag ban on their businesses have been significantly smaller than what were predicted during the debate about the ban.

Plastic debris hurts tourism and the economy

Schnurr, et, al, 2017, Reducing marine pollution from single-use plastics (SUPs): A review, Marine Pollution Bulletin, Reducing marine pollution from single-use plastics (SUPs): A review, Reducing marine pollution from single-use plastics (SUPs): A review - ScienceDirect, https://www.sciencedirect.com/science/article/abs/pii/S0025326X18307033

Economic and aesthetic impacts of marine plastic debris are vast and the global estimate of damage to marine ecosystems caused by plastic amounts to at least USD $13 billion annually from lost tourism revenues due to adverse impacts on recreational activities and navigation (Raynaud, 2014; Borrelle et al., 2017).

Retailers benefit from plastic bag bans

Andrew Macintosh, Amelia Simpson and Teresa Neeman, 2018, Australia National University Law School, Regulating Plastic Shopping Bags in the Australian Capital Territory, https://envcomm.act.gov.au/wp-content/uploads/2022/04/ACT-Plastic-bag-ban-options-analysis.pdf

Retailer compliance costs here refers to any net reduction in the economic surplus derived by retailers in the ACT as a consequence of the plastic bag ban. Limited information was able to be gathered on matters relevant to the assessment of compliance costs, including the wholesale cost of plastic shopping bags. However, the publicly available information and that provided by a relatively small number of retailers and suppliers suggests that, rather than decreasing retailer returns, the bag ban has increased them, if only by a small amount. Prior to the introduction of the ban, most ACT retailers did not charge for single-use HDPE bags. Those bags cost retailers in the order of 0.75-1 cents per bag immediately prior to the introduction of the ban and were available free of charge to shoppers. This meant that retailers either absorbed the costs of the bags (by reducing profits) or recovered the costs by imposing higher prices on other products. Since the introduction of the ban, a significant proportion of retailers now charge for plastic bags. Reusable HDPE bags are 109 K Willis et al. (in press) 'How successful are waste abatement campaigns and government policies at reducing plastic waste into the marine environment?', Marine Policy, doi.org/10.1016/j.marpol.2017.11.037. The study found that, while litter bans are correlated with lower litter in coastal areas, other policy measures aimed at the prevention of litter and its removal are often more effective and that the best outcomes arise from a combination of approaches. 110 Hardesty et al., above n 68. The study established a correlation between socio-economic status and litter densities. This may be a factor in the ACT due to the relatively high socio-economic status of the population. 56 typically either sold for 10 cents or provided free of charge, single-use biodegradable HDPE bags are generally sold for 5 cents or provided free of charge, reusable LDPE bags typically retail for 15 cents, and reusable polypropylene bags retail for around $1.111 The data available suggest the wholesale prices paid by retailers are approximately 4 cents for reusable (35 μm) HDPE bags, 2 cents for single-use biodegradable HDPE bags, 6-12 cents for reusable LDPE bags, and 70-80 cents for polypropylene bags.112 Given these wholesale and retail prices, the increases in retailer profits that are attributable to the plastic bag ban are likely to be small. For example, for single-use HDPE plastic bags, if the plastic bag ban was not introduced, retailers would have spent approximately $875,000 on plastic bags in 2017- 18, yet received no direct revenue from their distribution. With the ban, the aggregate net profit (before tax) to retailers from the sale and distribution of HDPE bags was probably in the order of $100,000, meaning there has been a net gain to retailers of around $975,000 relative to the situation if the ban had not been introduced. For reusable LDPE bags, the aggregate net gain to retailers between these two scenarios is likely to be in the order of $35,000 across the ACT. While small, the evidence suggests retailers are likely to have benefitted financially from the introduction of the ban rather than incurring costs.113

PRO – Answers to Alternatives

Voluntary Answers

Voluntary action fails

Society's use of plastic is increasing, while the ability to properly manage plastic waste is decreasing. In response, improved waste management systems and the adoption of reusable products made from sustainable materials are needed. Municipal governments in the United States are beginning to institute policies reducing unlimited free access to plastic products such as bags, straws, and Styrofoam. However, some state governments in the Great Lakes region, and elsewhere, have responded by making these pro-environmental policies illegal. Such policies shift the onus of using less plastic to local businesses and conscious consumers. In response, this project sought to determine the effectiveness of a plastic bag ban, supported by targeted education and outreach, at several local businesses in northeast Ohio. Results suggest that the initial implementation and non-enforcement phase of the bag ban did not lead to a reduction in the use of plastic bags. However, survey respondents indicate they are supportive of policies reducing accessibility and unlimited availability of plastic bags. Results further show most people have access to their own reusable bags and support businesses who charge for, or no longer offer, plastic bags. In conclusion, voluntary reduction of bag use by customers is not effective and store policies or legislation is needed to reduce the use of plastic bags.

Bans are more effective

Jill Bartolaa, 2021, Ohio Sea Grant College Program, Columbus, OH, Ban the Bag: Support for Plastic Bag Reduction Strategies in Northeast Ohio, Journal of Contemporary Water Research & Education, https://onlinelibrary.wiley.com/doi/full/10.1111/j.1936-704X.2021.3361.x

Plastic bags are commonly found in the environment negatively affecting water quality and human and wildlife health and safety. They are costly to manage at the end of their lifecycle, costing taxpayers hundreds of thousands of dollars annually. A simple solution is reusable bags – a readily available and inexpensive alternative that many consumers already own. Yet, voluntary actions by consumers to limit their plastic bag use are not occurring because there are no consequences as plastic bags are readily available for free. Outreach to educate customers and the early implementation phase of a countywide plastic bag ban were not seen as effective tools at limiting use of plastic bags. Therefore, enforced bag reduction policies at the business and government level are important and supported by participants in this study.

A clothing resale store, which adopted a bagless initiative, has seen positive responses from customers and has not seen a decline in profits or customer base. Educating staff and customers about plastic pollution is seen as an important measure for businesses to take when adopting pro-environmental business practices. Informing customers of upcoming bag ban or bag fee initiatives and giving them time to adjust is another important step in attaining customer support for plastic bag reduction strategies. This practice can be especially important to customers of color, disabled shoppers, the elderly, and users of public transportation. Our study identified concerns around bagless initiatives creating potential risks when these customers take items out of the store without a bag or receipt for proof of purchase. Moving forward, digital strategies proving purchase and encouraging consumers to bring their own bags from their home or car and into the store are needed, as well as the gradual implementation and eventual enforcement of plastic bag reduction government policies or business initiatives.

Recycling Answers

Recycling programs fail
Travis Wagner, 2017, Department of Environmental Science & Policy, University of Southern Maine, Waste Management, Reducing single-use plastic shopping bags in the USA, Reducing single-use plastic shopping bags in the USA - ScienceDirect
In 2014, in the USA, 103.465 billion single-use plastic shopping bags were consumed. Because of their extremely low recyclability rate, plastic bags remain a significant source of land-based litter and marine debris and impair stormwater management systems.

Most plastic is not recycled, this is especially true of single use plastic
Courtney Lindwall, January 9, 2020, Single-Use Plastics 101, https://www.nrdc.org/stories/single-use-plastics-101#what
Recycling more plastic, more frequently, reduces its footprint. Polyethylene terephthalate, one of the most commonly recycled plastics and the material that makes up most water and soda bottles, can be turned into everything from polyester fabric to automotive parts. But the OECD (Organisation for Economic Co-operation and Development) found that a whopping 91 percent of all plastic isn't recycled at all. Instead it ends up in landfills or in the environment. Single-use plastics in particular—especially small items like straws, bags, and cutlery—are traditionally hard to recycle because they fall into the crevices of recycling machinery and therefore are often not accepted by recycling centers.

Only a small percentage are recycled
Wang et al, 2022, Qingbin Wang, Department of Community Community Development and Applied Economics, University of Vermont, Qingbin Wang is a professor and Angela Tweedy is a graduate research associate at the University of Vermont, and Helen Wang is a research assistant at Smith College, Reducing plastic waste through legislative interventions in the United States: Development, obstacles, potentials, and challenges, Sustainable Horizons, March 2022, Reducing plastic waste through legislative interventions in the United States: Development, obstacles, potentials, and challenges,
https://www.sciencedirect.com/science/article/pii/S2772737822000086
The distribution of about one trillion single-use plastic bags around the world each year has caused many environmental problems, including harmful impacts on human and animal health; pollution of landscapes, soil, and groundwater; and increased challenges for waste management (Teuten et al., 2009; Hardesty et al, 2014; Larsen and Venkova, 2014; Thompson, 2017; Kish, 2018; Ranniger, 2020). According to the U.S. Environmental Protection Agency (2020), in 2018, about 4.20 million tons of plastic waste (bags, sacks, and wraps) were generated in the United States, but only about 0.42 million tons or 10% were recycled. For the remaining 3.78 million tons, about 0.75 million tons were combusted and 3.03 million tons were disposed of in landfills.

Education Answers

Education isn't enough; need to combine education with policy action

Eva Touhey, 2019, University of Rhode Island, Touhey, Eva, "THE INFLUENCE OF PLASTIC BAG BANS ON PRO-ENVIRONMENTAL BEHAVIORS IN RHODE ISLAND COASTAL COMMUNITIES" (2019). Open Access Master's Theses. Paper 1468. https://digitalcommons.uri.edu/theses/1468

There is mixed support for plastic bag policies at the individual and municipal and state level governments. Some argue that education and raising awareness about the marine debris issue at large will be sufficient in solving marine debris pollution because the surplus of information will influence individuals to participate in environmentally friendly behaviors; however, the environmental behavior literature suggests that education alone is not sufficient in addressing environmental issues (Kollmuss & Agyeman, 2002). On the other hand, a combined approach of education and policy is said to be an effective measure at reducing forms of marine debris (Sheavly & Register, 2007).

Education programs do not reduce plastic bag usage

Eva Touhey, 2019, University of Rhode Island, Touhey, Eva, "THE INFLUENCE OF PLASTIC BAG BANS ON PRO-ENVIRONMENTAL BEHAVIORS IN RHODE ISLAND COASTAL COMMUNITIES" (2019). Open Access Master's Theses. Paper 1468. https://digitalcommons.uri.edu/theses/1468

The second way that plastic bag pollution can be addressed is through behavior change. The environmental conservation behavior literature provides many examples to help contextualize why individuals perform specific behaviors and how to influence behavior changes. De Young (1993) discusses three approaches for stimulating behavior change, the first being an informational technique. This technique uses informational messaging to educate people about why they need to change their behaviors to accommodate an environmental problem, and how they can then change their behaviors to consider the said environmental condition. This model was created in the 1970s and is referred to as the information deficit model of public understanding and action, as well as the linear model. Many social science experiments that use this model illustrate that the more environmental knowledge that a person has, does not guarantee a change in their attitude, and therefore does not drive more environmentally friendly behaviors (Kollmuss & Agyeman, 2002).

Rhode Island proves that plastic bag bans produce positive behavior change

Eva Touhey, 2019, University of Rhode Island, Touhey, Eva, "THE INFLUENCE OF PLASTIC BAG BANS ON PRO-ENVIRONMENTAL BEHAVIORS IN RHODE ISLAND COASTAL COMMUNITIES" (2019). Open Access Master's Theses. Paper 1468. https://digitalcommons.uri.edu/theses/1468

This study investigated the effects of a first-generation plastic bag ban on behavioral spillover of additional pro-environmental behaviors in both the private and public spheres of environmentalism. It also assessed community members' knowledge of plastic bag policies within their community of residence. Face-to-face surveys were completed within two communities in Rhode Island: Middletown, a town with an implemented plastic bag ban, and Warwick, a community without a plastic bag ban.

The major results of the study found that NEP, an indicator for environmental worldview, was a significant predictor for using reusable bags and reusable water bottles, and for supporting a statewide plastic bag policy in Rhode Island. Age was also a significant predictor of reusable bag and reusable water bottle use; however, age range was inversely related to these two behaviors. Additionally, gender was a predictor for reusable water bottle use. Lastly, the most noteworthy finding illustrated that town of residence was a significant predictor for reusable bag use and support for a statewide plastic bag ban in Rhode Island, suggesting that people who lived in a community with an implemented plastic bag ban had greater support of a plastic bag policy at the state level and used reusable bags more frequently.

This study provides a preliminary look into the possible effects of plastic bag policies on environmental behaviors and environmental policy in the state of Rhode Island. The results of this study could suggest broader support of environmental policies in the state; however, a study encompassing more than one community with an implemented plastic bag policy needs to be completed in order to be more 45 conclusive about this recommendation. In addition, even though this study did not show behavioral spillover, this does not indicate that the plastic policy did not influence other environmental behaviors that were not included in this study.

For policymakers, the findings in this study suggest that implemented plastic bag bans in Rhode Island lead to greater use of reusable bags, even when the consumer has the choice of using a free paper bag at the point of purchase. In addition, this study illustrates that to some degree, the establishment of local environmental policies can create the opportunity for support of similar statewide policies. Therefore, studying the effects of

environmental policies is important to assess current policy and the implementation of future policies at the local and state-level. Single-use plastics, like the plastic bag, are littering the environment and causing harm to all living organisms, while their complete effect on ecosystems is still unknown. Nevertheless, research focusing on marine debris solutions provides important insight about the global issue and how to improve remediation plans moving into the future.

PRO – Kritik Answers

Answers to: Capitalism Kritik

Plastics are baked into capitalism

NANJALA NYABOLA, April 18, 2023, The Nation, Nothing Encapsulates the False Promise of Capitalism Like Plastic, https://www.thenation.com/article/environment/plastic-recycling-capitalism/

I met Angeline Razafinzhary at her hosue in 2019 while on assignment in Antananarivo, the capital of Madagascar. A design magazine had commissioned me to write about a plastic recycling initiative, and I wanted to speak with one of the hundreds of Malagasy people who trawl municipal waste to find different materials that they can sell to recyclers. In her home, cobbled together from available material, Razafinzhary, her children, and grandchildren ate, cooked, and slept across from a heap of hundreds if not thousands of plastic bottles. Before meeting Razafinzhary, I had a vague sense of there being a problem with plastic. My own country, Kenya, had banned single-use plastic bags and was working toward a ban on single-use plastic bottles. But it wasn't until I was doing research for that piece that I fully appreciated how insidious plastic had become—and how mistaken our notions of recycling are. The work that Razafinzhary does for pennies—braving household, commercial, and medical waste with no protective gear—is the thin thread holding together the global recycling system, and I haven't stopped thinking about it. Plastics are some of the most useful materials ever invented, and they are killing the planet. **Plastic is everywhere, and it perfectly encapsulates the notion that there is no ethical consumption under capita**lism. Whether you are reading this on your phone or on your computer, you are handling the material. If you brushed your teeth this morning, odds are both your toothbrush and toothpaste contained plastic. Almost all artificial fabrics are made from plastic or its derivatives, including those presented as ethical alternatives like many kinds of vegan leather. If you are a person who menstruates, it is probably in the materials that you are using to manage that. That **durability and malleability at relatively low prices is precisely what makes it dangerous to the natural environment**. We consume it unthinkingly and in absurd volumes because the cost of accessing it is so low—yet it can last in the environment for hundreds of years. **The problem of plastic encapsulates everything that is wrong with whatever international order exists today. *We miscalculate its balance sheet of utility because we don't account properly for harms that cannot be easily measured in money. Decisions that look cheap on the surface look a lot different if we used a longer time horizon or stopped assuming that the planet has an infinite capacity to absorb human excess. Regions that are the most responsible for causing the problem are working hard to reallocate its consequences to other parts of the world***. There would perhaps be greater cooperation if there weren't deliberate choices taken to keep people oblivious to the scale of the problem. Companies happily brand materials like single-use water bottles as recyclable, knowing that even the most efficient recycling system cannot keep up with the rate at which they are consumed. The myths around what happens when we recycle drive people to consume more because they believe that the problem of plastic waste has been solved. The United States and Europe are the biggest consumers of plastic in the world, even though it is mainly manufactured in China, and, until recently, most of the waste was sold to countries in Asia allegedly to be recycled. But these Asian countries have had enough. In 2017, for example, China banned plastic waste imports from Europe, because they are never properly sorted, and most of what cannot be used ends up in their rivers and landfills. China burns plastic waste as industrial fuel, and people like Razafinzhary make countries like Madagascar more attractive places to offload material, because poor people physically sort through the waste instead of machines, which are less able to distinguish different types of plastic. **What we have right now is a palliative, half-finished model of recycling that misrepresents the site and scale of the problem and distracts people with individual action as industrial failures grow.** The recycling system inspires people to take personal responsibility, but it misleads people about the value of those actions. Certainly, individual use is a part of the problem. The Heinrich Böll Foundation's Plastic Atlas found that more than half of all the plastic that has ever been produced in the world was produced after the year 2000**. A 2022 Reuters investigation found that around the world 1 million plastic bottles are bought every minute. Yet most of the plastic that we dutifully sort into recycling bins ends up in landfill, waterways, or the ocean. Consumption is growing at startling rates even while the recycling myth falls apart. In March 2023, research estimated that there are about 171 trillion pieces of plastic floating in the ocean, and microplastics have been found in drinking water, as well as in human lungs, veins, and placentas. We are choking in plastic** If you knew the mineral water on your desk or the polyester shirt that you only wore once would one day end up in your dinner and in your veins, would you consume it as thoughtlessly? It's not an accident that you don't think about the pervasiveness of plastic. Plastic comes from petroleum, and oil companies spend a great deal of money to foster the illusion that plastic can be recycled,

though most of it cannot. **The plastics crisis represents what happens when we stop seeing the world as geographically and temporally interconnected. We are deliberately led believe that consumption is a net positive. Standard economic theory tells us that without mass individual consumption, there is no economic growth. In wealthy countries especially, people are encouraged to believe that consumption symbolizes progress. If you don't replace your phone every 12 months, the tech company's profit flatlines, and this has a knock-on effect on the nation's economy. Don't worry about the old thing; just put the problem in a colored bin and forget about it. *The plastic crisis is built into the economic model*. Waste is an inevitable consequence of a system that stops at the value of consumption and refuses to acknowledge the waste that comes from it. Chasing fashion trends and replacing electronics every few months is not a consequence-free lifestyl**e. We must reframe the place that unchecked consumption and the abstraction of its waste have in our idea of what it means to be human. The plastic problem is a failure that cannot be fixed by anything short of a fundamental reorganization of our lives. I'm keenly aware that this is a huge demand, but the more you read the more you realize the time for alternatives has passed. When I left Madagascar, I tried to make small incremental transformations in my own life—bar soap instead of shower gel, bamboo toothbrushes, no more clingfilm, things like that. But when my phone got damaged, I still had to buy a new one, because the manufacturer does not repair phones that are more than four years old, and every "Phone Guy" said the parts would be too expensive to try a repair. Individual good intentions can carry us only so far when the system is stacked in favor of the status quo. It's time to let individual action be additive to the energy we put into changing the system.

CON – Solvency Answers

Bans Fail

Bans too hard to enforce

Muposhi, et al 2022, 1Department of Marketing Management, Midlands State University, Zimbabwe, Muposhi A, Mpinganjira M, Wait M. Considerations, benefits and unintended consequences of banning plastic shopping bags for environmental sustainability: A systematic literature review. Waste Manag Res. 2022 Mar;40(3):248-261. doi: 10.1177/0734242X211003965. Epub 2021 Apr 20. PMID: 33876669; PMCID: PMC8847762.

Although the ban on plastic bags is gaining in prominence as a policy option to manage plastic bag litter, there are mixed views on its rationale and effectiveness. This study employs a systematic literature review to understand considerations, benefits and unintended consequences of banning plastic bags. The review's results pointed to the limited success of a plastic bag ban owing to lack of suitable alternatives, limited state capacity to monitor and enforce the ban, thriving black market, structural and instrumental power of the plastic industry.

At best, some small solvency

Muposhi, et al 2022, 1Department of Marketing Management, Midlands State University, Zimbabwe, Muposhi A, Mpinganjira M, Wait M. Considerations, benefits and unintended consequences of banning plastic shopping bags for environmental sustainability: A systematic literature review. Waste Manag Res. 2022 Mar;40(3):248-261. doi: 10.1177/0734242X211003965. Epub 2021 Apr 20. PMID: 33876669; PMCID: PMC8847762.

While many benefits may be expected from PBBs, the impact of any public policy – including a PPB – needs to be assessed in order to justify its implementation. The articles reviewed pointed to the limited success of such initiatives, as well as a general lack of detailed data for a proper impact assessment (UNEP, 2018b). The limited availability of data renders efforts to quantify the economic and social impact of the ban difficult (Macintosh et al., 2020; Xanthos and Walker, 2017). Equally, there is limited data from the reviewed articles on the environmental impact in areas such as reduced ingestion and entanglement of micro-plastics by animals in land and marine environments before and after the ban (Thompson et al., 2009; Vince and Hardesty, 2017). Several factors were identified during the review to contribute to the failure to implement PPBs effectively.

Any reduction in plastic bag use is only short-term

Andrew Macintosh, Amelia Simpson and Teresa Neeman, 2018, Australia National University Law School, Regulating Plastic Shopping Bags in the Australian Capital Territory, https://envcomm.act.gov.au/wp-content/uploads/2022/04/ACT-Plastic-bag-ban-options-analysis.pdf

The results suggest the ACT plastic bag ban has led to significant reduction in net plastic bag consumption across the five modelled bag types. Consumption of reusable LDPE, reusable polypropylene and garbage bags were all estimated to be higher in scenario 2 (with the ban) than scenario 1 (without the ban), by 16.8 tonnes, 2.4 tonnes and 14.0 tonnes respectively in 2017-18 (Figure 6). However, these increases were more than offset by a reduction in the relative consumption of HDPE bags. In 2017-18, consumption of HDPE bags was estimated to be 232 tonnes lower than it would have been if the ban was not introduced. The estimated net reduction in plastic bag consumption across all five bag types (scenario 2 consumption relative to scenario 1) in 2017-18 was 199 tonnes. The estimated cumulative reduction in net plastic bag consumption over the period 2011-12 to 2017-2018 was 1,132 tonnes. Overall, total consumption (tonnes) of HDPE, reusable LDPE, reusable polypropylene, garbage bags and produce bags in the ACT is estimated to be less than the levels prior to the introduction of the ban (Figure 7). Consumption in 2017-18 was approximately 953 tonnes, compared to 973 tonnes in 2010-11. However, as time passes, increasing population levels and household consumption are driving plastic bag consumption back to the levels seen prior to the introduction of the ban. Further policy intervention may be necessary if the object of the policy is to keep plastic bag consumption below 2011 levels.

Higher cost of alternatives creates consumer resistance

Muposhi, et al 2022, 1Department of Marketing Management, Midlands State University, Zimbabwe, Muposhi A, Mpinganjira M, Wait M. Considerations, benefits and unintended consequences of banning plastic shopping bags for environmental sustainability: A systematic literature review. Waste Manag Res. 2022 Mar;40(3):248-261. doi: 10.1177/0734242X211003965. Epub 2021 Apr 20. PMID: 33876669; PMCID: PMC8847762.

Moreover, businesses that support banning SUPBs, especially those in the retail industry, are often accused of profiteering from the alternatives by charging high margins. In the end, this discourages consumers from taking up the alternatives to SUPBs. Community support captures general support of the ban by members of the public, while green consumerism focuses on specific support from consumers in adopting green habits.

Consumer resistance kills solvency

Muposhi, et al 2022, 1Department of Marketing Management, Midlands State University, Zimbabwe, Muposhi A, Mpinganjira M, Wait M. Considerations, benefits and unintended consequences of banning plastic shopping bags for environmental sustainability: A systematic literature review. Waste Manag Res. 2022 Mar;40(3):248-261. doi: 10.1177/0734242X211003965. Epub 2021 Apr 20. PMID: 33876669; PMCID: PMC8847762.

Another key finding from the literature is a lack of consensus on the rationale for a PBB. In view of growing evidence that the age of plastics is still with us, EuroCommerce (2014), Stephenson (2018) and Behuria (2019) argue that a ban will not succeed with weak waste management infrastructure, institutions and without support from strong social norms. The high cost of ban enforcement and monitoring also makes a ban unsustainable in the long term (EuroCommerce, 2014; He, 2012). To address this, He (2012) suggests that the challenges attributed to plastic bags, such as littering behaviour and pollution, can be easily changed through education and engagement. Findings from environmental psychology can be used to develop behavioural change strategies. Regulations have the inherent challenge of crowding out intrinsic behaviour, thereby diluting individuals' sense of responsibility to engage in good citizenship behaviours (He, 2012). France, Finland, Indonesia and Luxembourg achieved reduced plastic bag litter levels through the use of voluntary initiatives (Larsen and Venkova, 2014). For instance, France reported a decrease in the use of SUPBs from 10.5 billion in 2002 to 800 million in 2013 through the use of voluntary initiatives that focused on promoting reusable shopping bags. Similarly, a plastic bag deposit-refund scheme proved to be effective in Indonesia (Heidbreder et al., 2019). Rather than banning plastics, EuroCommerce (2014) suggests the importance of developing robust policies to promote a circular economy based on key pillars such as green growth, enhancing recyclability and green reverse logistics. In this regard, extended producer responsibility proved to be effective in Denmark (Larsen and Venkova, 2014).

Bans didn't work in China and India

Muposhi, et al 2022, 1Department of Marketing Management, Midlands State University, Zimbabwe, Muposhi A, Mpinganjira M, Wait M. Considerations, benefits and unintended consequences of banning plastic shopping bags for environmental sustainability: A systematic literature review. Waste Manag Res. 2022 Mar;40(3):248-261. doi: 10.1177/0734242X211003965. Epub 2021 Apr 20. PMID: 33876669; PMCID: PMC8847762.

No significant reduction in global environmental pollution. China and India continue to be the largest contributors to marine plastic bag litter despite implementation of plastic bag ban (Dauvergne, 2018; Jambeck et al., 2018; Xanthos and Walker, 2017).

Incidences of consumer and business disobedience in the form of reluctance to comply with the ban were reported in China, India, Kenya, Uganda and Zimbabwe (Chitotombe, 2014; Death, 2015; He, 2012). Consumer concerns centre on the inconvenience associated with the ban, especially with unplanned buying behaviour and the high cost of alternatives such as reusable shopping bags (Coulter, 2009; Wagner, 2017). Critics of reusable shopping bags doubt the credibility of their claimed environmental benefits (Muthu et al., 2013).

SUPs responsible for a lot of environmental damage

Muposhi, et al 2022, 1Department of Marketing Management, Midlands State University, Zimbabwe, Muposhi A, Mpinganjira M, Wait M. Considerations, benefits and unintended consequences of banning plastic shopping bags for environmental sustainability: A systematic literature review. Waste Manag Res. 2022 Mar;40(3):248-261. doi: 10.1177/0734242X211003965. Epub 2021 Apr 20. PMID: 33876669; PMCID: PMC8847762.

Single-use plastic shopping bags (SUPBs) are a significant source of environmental pollution (Jambeck et al., 2015; Xanthos and Walker, 2017). Improperly disposed SUPBs clog waterways resulting in flooding (Martinho et al., 2017), impair the visual appeal of landscapes (Xanthos and Walker, 2017) and reduce the recreational value of seashores (Jory et al., 2019).

A lot of oil is used in plastic bag manufacturing

Muposhi, et al 2022, 1Department of Marketing Management, Midlands State University, Zimbabwe, Muposhi A, Mpinganjira M, Wait M. Considerations, benefits and unintended consequences of banning plastic shopping bags for environmental sustainability: A systematic literature review. Waste Manag Res. 2022 Mar;40(3):248-261. doi: 10.1177/0734242X211003965. Epub 2021 Apr 20. PMID: 33876669; PMCID: PMC8847762.

Substantial amount of petroleum used to manufacture plastic bags (Rivers et al., 2017; Taylor and Villas-Boas, 2016; Zen et al., 2013)Plastic bag bans lower retailer costs

Prior to the lawsuits that outlaw the plastic bag ban, retailers in California were able to reduce estimated packaging costs of $140 million per year (UNEP, 2018a).

Plastics in everything, can't solve

Jill Bartolaa, 2021, Ohio Sea Grant College Program, Columbus, OH, Ban the Bag: Support for Plastic Bag Reduction Strategies in Northeast Ohio, Journal of Contemporary Water Research & Education, https://onlinelibrary.wiley.com/doi/full/10.1111/j.1936-704X.2021.3361.x

The majority of products made worldwide contain plastic because of its ability to be shaped into almost anything, its durability, and low production cost (Sigler 2014). Estimates based on prediction models developed by Geyer et al. (2017) suggest over 350 million metric tons of plastic are produced each year, with this number expected to increase by 2050. In the Great Lakes region, plastic accounts for 90% of the litter profile on beaches (Alliance for the Great Lakes 2019) and floating debris (Derraik 2002). Plastic is problematic in the environment because the characteristics making plastic a desirable product (lightweight, malleability, durability) also allow it to wreak havoc on living organisms (ingestion, entanglement, leaching of harmful chemicals) (Katsanevakis 2008; Andrady 2011). Plastic debris makes its way into the water system via land-based activities and through stormwater discharge, runoff, intentional and unintentional littering, unregulated disposal, leakage of waste (industry and residential), recreational activities such as fishing, and the shipping industry (Katsanevakis 2008; Andrady 2011; Lambert et al. 2014). It is estimated that 9,887 metric tons of plastic debris are entering the Great Lakes each year, with almost half entering Lake Erie alone (Hoffman and Hittinger 2017).

Consumption of other plastics increases

Andrew Macintosh, Amelia Simpson, Teresa Neeman, Kirilly Dickson, The Australian National University, March 2020, Plastic bag bans: Lessons from the Australian Capital Territory, Resources, Conservation and Recycling, Volume 154, March 2020,

Bans on single-use plastic shopping bags are amongst the most popular policy interventions taken by governments to address the harms associated with plastics. Yet, there are few published studies on their effectiveness and durability. This article addresses this gap, presenting the results of a study on the impacts of a ban on single-use plastic bags introduced in the Australian Capital Territory in 2011. The study assessed whether the ban has reduced plastic bag consumption and litter, and whether community support for the ban was sustainable. The results suggests the ban has not been overly effective in reducing plastic bag consumption or litter. Over the almost seven-year study period, between 2011 and 2018, the ban reduced consumption of single-use conventional polyethylene bags by ~2600 tonnes. However, these reductions were largely offset by increases in the consumption of other bags. The net effect of the ban on plastic consumption over the period was relatively minor; a 275 t reduction. Notwithstanding this, the ban is widely supported. When it was first introduced, 58 % of the community supported the ban. By 2018, this had increased to 68 %. The article explores the implications of the results and the need for better information on plastic bag consumption.

Australia proves that there is, at best, a modest reduction

March 2020, Plastic bag bans: Lessons from the Australian Capital Territory, Resources, Conservation and Recycling, Volume 154, March 2020,

Impact of the ban on the consumption of plastic bags

The results suggest the ban resulted in only a temporary decline in relevant plastic bag consumption (Fig. 1). Estimated consumption of the seven bag types was 924 tonnes in the financial year in which the ban was introduced (2011-12). Four years later, in 2015-16, it surpassed these levels, reaching 960 tonnes. In the final year of the study period, 2017-18, consumption is estimated to have reached 1030 tonnes. Ongoing population and household consumption growth are likely to lead to continued

Discussion. The aims of the study were to evaluate whether the ACT plastic bag ban has reduced plastic bag consumption and litter, and whether community support for the ban is sustainable. The results suggests the ban has not been overly effective in reducing plastic bag consumption or litter but, notwithstanding this, it has enjoyed a high level of community support. Given the high administrative capacity of the ACT Government, the magnitude of the penalties for non-compliance, and the relatively small.

Conclusion. Bans on single-use plastic shopping bags are amongst the most popular policy interventions taken by governments to address the harms associated with plastics. Despite their popularity, they have attracted little academic interest. This study addresses this gap in the literature, presenting the results of an evaluation of the ban on single-use plastic shopping bags introduced in the ACT in 2011.

People will just use more garbage bags, offsetting the gains

Ethan Brown, NPR, November 4, 2022, Plastic Bags Are a Problem. Are Plastic Bag Bans a Solution?, https://www.pbs.org/wnet/peril-and-promise/2023/03/plastic-bags-are-a-problem-are-plastic-bag-bans-a-a-solution/

TAYLOR: Thanks. Yes, this was a paper that was interested in how sometimes we don't always think about how people respond to policies, they're sort of the obvious response. That's the intended goal of the policy. And then sometimes there's these added responses that are unintended. So the unintended consequences. This paper in particular was interested in a California policy, which is a ban on thin plastic, carry out bags, and a fee for paper bags of about 10 cents, usually, sometimes five cents. And the question that I had was, how does banning this plastic carry out bag affect the use of other types of plastic bags, and in particular, garbage bags, because as a consumer myself, I knew that I reused many of my carry out grocery bags as garbage bags. And when I no longer had access to those carry out bags, it meant I didn't have this quote unquote, free source of garbage bags anymore. So I was really interested to see what the data would say about this were people having to buy more garbage bags now that the plastic bags that they got from grocery stores were no longer available. So that's exactly what I did. I collected data from supermarkets, on the types of bags people were using at checkout, both before and after the policy went into effect. I also got retail data from the store on what people were purchasing, in particular, what kinds of garbage bags they were purchasing. And what I found was the policies were very successful in reducing the amount of plastic carry out bags people used at supermarkets, it goes to zero as you would expect with a ban. But sales of garbage bags increased substantially and especially those small garbage bags that you know, are around the same size as the carryout back. They increase their sales by almost 120%. So what this tells us is that **people** were actually doing this very green thing. They **were reusing their carry out bags as garbage bags. And that's not purchasing garbage bags. When we got rid of the carry out bags, people had to start purchasing garbage bags.** And so this was an unintended consequence of the policy. And sort of the bottom line, what I found with in terms of like the amount of plastic, was **about a third of the plastic that was eliminated by the carry out bag ban came back in the form of garbage bags, which do tend to be a bit thicker than the carry out bags.**

ETHAN: So just to wrap up this point, would you say that it's a net positive or negative? Or is it a little too nuanced to make that type of assessment?

TAYLOR: It's a great question, I would say it's a bit nuanced, because that was just respect with respect to the plastic bags. I also looked at paper bags as well**. When the plastic bags were banned in Californ**ia, paper bags were still allowed with the feet. So **paper bag usage did increase quite a bit. And paper bags, when you compare them to plastic bags, they are environmentally more environmentally friendly in some ways, but in other ways, they're less environmentally friendl**y. So paper and plastic as litter paper, you know, decomposes, it breaks down, it's not as harmful to the environment, if it if it's litter. Plastic, on the other hand, lasts for a long time. So if it's, if it makes it into the environment, it stays there, it breaks into smaller pieces, it gets blown around the world, many different ecosystems. But on the other hand, **paper has a much higher carbon footprint than plastic, it's much more water intensive, it's much more energy intensive to produc**e. So when you do lifecycle assessments of these two different types of material, paper bags end up being much worse on sort of their upstream, the manufacturing side, so it's a bit concerning to also see the shift to paper. And so when we think about these policies, we're balancing these different environmental objectives. On one hand, we are reducing the amount of litter. On the other hand, we're using thicker bags, which might be emitting more carbon and pollution into the atmosphere. So it's a bit nuanced. But in terms of plastic, you are correct. What I found was a net benefit, we were still reducing more plastic than this rebound effect.

ETHAN: It's true. Plastic bag bans haven't fixed the entire problem where they've been implemented. Often, the problem shifts. It's like when your boss bans YouTube at work, so everyone jumps to Discord. Definitely not the intention. In some cases, people start buying more plastic trash bags now that they can't use their grocery bags to store trash. And in pretty much any case, **people shift to an alternative type of grocery bag, and while plastic is unique in that it does not decompose, other types of bags have issues of their own.**

Paper bags take more energy to produce and trigger deforestation

Ethan Brown, NPR, November 4, 2022, Plastic Bags Are a Problem. Are Plastic Bag Bans a Solution?, https://www.pbs.org/wnet/peril-and-promise/2023/03/plastic-bags-are-a-problem-are-plastic-bag-bans-a-a-solution/

All that said, paper is made from trees, meaning paper bags contribute to deforestation. Americans consume more than 10 billion paper bags annually, which is equivalent to 14 million trees. As compared to plastic bags, paper bags also require significantly more energy and water to manufacture, and more energy to transport since they're heavier. Put all that together, and National Geographic estimates that a paper bag would need to be used anywhere from 3 to 43 times in order to neutralize its environmental impact as compared to plastic. Different studies say different things, but the point is clear: even though paper bags are much better for the environment in the disposal stage, the rest of the supply chain is riddled with problems.

Cotton bags threaten the environment

Ethan Brown, NPR, November 4, 2022, Plastic Bags Are a Problem. Are Plastic Bag Bans a Solution?, https://www.pbs.org/wnet/peril-and-promise/2023/03/plastic-bags-are-a-problem-are-plastic-bag-bans-a-a-solution/

Cotton tote bags don't fare well either. Cotton is a crop that requires massive amounts of water and energy to produce. Because of that, the climate impact of a cotton tote is 131 times that of a plastic bag, and its overall environmental impact is thousands of times worse. Obviously, a cotton tote does have a much longer life than a plastic or paper bag, but we also have to be honest with ourselves. Will we use our cotton tote hundreds or thousands of times? If so, awesome, although we should probably talk about why you're that obsessed with your tote bag. Like, get a life, man. And if not, then maybe totes aren't the best alternative.

Can't solve Asia and large plastics

Angela Logomasini • 05/07/2018, Counterpoint: Plastic Bans Won't Solve Ocean Plastic Problem, https://cei.org/opeds_articles/counterpoint-plastic-bans-wont-solve-ocean-plastic-problem/

Proposed "solutions" to mounting plastic waste in the ocean continue to border on the absurd — suggesting that banning straws, bags and other consumer products offers an answer. While these policies might make good political sound bites, they are unlikely to solve anything, and they divert attention away from real solutions. Plastics that are washed out to sea have accumulated in certain areas of the ocean because of rotating currents, creating floating patches of concentrated trash and fragments. Media hype in the past suggested that these amount to massive "islands" of consumer waste covering the ocean surface. Yet researchers have reported that the waste is more dispersed and fragmented. Angelicque "Angel" White, an oceanography professor at Oregon State University, pointed out after a 2011 expedition to the "Great Pacific Garbage Patch," which lies between California and Japan: "You might see a piece of Styrofoam or a bit of fishing line float by at random intervals after hours or 20 minutes." The nonprofit The Ocean Cleanup has taken a closer look at the problem and how to solve it. Recently, they produced the most comprehensive assessment of the problem ever, which they detail in the 5 March 2018 issue of Scientific Reports. This ambitious effort deployed 30 ships equipped to collect a wider range of debris sizes than before and repurposed military aircraft equipped with sensors to detect trash. After collecting and counting more than a million pieces of trash, they then characterized the size of the patch and what it contains. Their study maintains that the Pacific patch is larger than estimated, covering territory three times the size of France with waste larger than previously estimated. They also estimate that up to 20 percent of the mass may have resulted from the 2011 Tohoku tsunami, which sucked trash out to sea. Interestingly, the primary culprits weren't straws, cups and plastic bags. In The Ocean Cleanup's Pacific patch sample, 46 percent was fish nets. When combined with ropes and lines, it amounted to 52 percent of the trash. The rest included hard plastics ranging from large plastic crates and bottle caps to small fragments referred to as microplastics, which comprise 8 percent of the mass. Obviously, this is not simply a consumer waste issue, and the solutions need to address that. Some of the waste, such as food packaging, included written material that indicated a significant portion came from Asia. Of these, 30 percent where written in Japanese and 30.8 percent were in Chinese. Other studies confirm that Asia is a substantial source of ocean garbage. Data in a 2015 Science published study revealed that China and 11 other Asian nations are responsible for 77 percent to 83 percent of plastic waste entering the oceans because of their poor disposal practices. A 2017 Environmental Sciences & Technology study reported that up to 95 percent of plastic waste enters oceans from one of 10 rivers — eight in Asia and two in Africa. Unfortunately, addressing such trash flow from less developed parts of Asia and Africa may take decades. Of course, other nations should do their best to reduce their contributions, no matter how small. The Science article placed the United

States as 20th, but its contribution to ocean plastics was just about 1 percent, even though the United States is among the top plastic producers and consumers. Credit goes to modern waste management practices — landfilling, incineration or recycling — and litter control. The nonprofit Keep America Beautiful (KAB) has taken the lead in the United States to fight litter since 1953. KAB educates the public through public service announcements — such as the weeping native American ad from the 1970s — and mobilization of businesses, individuals and local governments to implement litter control programs. In fact, KAB reports that U.S. litter has declined by 61 percent since 1969. Today, The Ocean Cleanup is assuming a similar role to clean the oceans. In addition to offering valuable research, it maintains it has developed and can deploy cleanup technologies that could remove more than 50 percent of the waste from the Pacific patch within five years, which would be quite a remarkable achievement if it can do it without significant harm to wildlife. While trendy bans on plastic bags, cups, straws and whatever else may enable lawmakers to grandstand on the issue for political credit, they only divert attention from developing real solutions that actually tackle the problem.

No net environmental gain

Andrew Macintosh, Amelia Simpson and Teresa Neeman, 2018, Australia National University Law School, Regulating Plastic Shopping Bags in the Australian Capital Territory, https://envcomm.act.gov.au/wp-content/uploads/2022/04/ACT-Plastic-bag-ban-options-analysis.pdf

Environmental effectiveness On the basis of the available information, it is difficult to evaluate how effective increasing the mandated minimum thickness requirement might be in reducing plastic consumption. There is uncertainty about the extent to which behaviours regarding the use of 35 µm HDPE bags differ from those involving ≥45 µm plastic bags. Increasing the mandated minimum thickness requirement might simply result in the substitution of thicker bags for thinner ones, without changing the number of bags consumed or littered. 117 For these purposes, it is assumed the minimum thickness requirements applies only to conventional (fossil fuel-based) plastic bags, meaning biodegradable bags of less than 35 µm could still be offered. 69 One of the reasons for the uncertainty is the different nature of the products offered by some smaller retailers and other bag distributors. For example, where plastic bags are used to carry products that befoul the bags (e.g. fish, takeaway meals in containers that leak, poisonous materials or plants), increasing the thickness of the bag is unlikely to prolong its useful life. Consumers will typically discard the bag rather than clean and reuse it. On the other hand, if the minimum thickness is increased, most retailers will charge for bags, providing an incentive for consumers to alter their behaviour. Industry sources suggest there is an approximately 6:1 'substitution rate' between single-use HDPE and reusable HDPE and LDPE bags when singleuse HDPE bags are banned or otherwise removed from distribution. The substitution rate in this context refers to the ratio between the number of conventional single-use HDPE bags distributed prior to the introduction of the ban and the increase in the number of reusable (HDPE and LDPE) and single-use biodegradable bags sold or distributed after the ban's commencement. In the ACT, the available data suggest the 'substitution rate' was similar to the industry estimate, at 5:1. Given the nature of the HDPE bags currently offered in the ACT, the fact the ACT has already banned lightweight HDPE bags, and the extent of behavioural change that has already occurred around the use of plastic bags, the rate of substitution between 35 µm HDPE bags and thicker plastic bags in the ACT would likely be higher if the minimum thickness requirement was increased. However, if it is conservatively assumed that increasing the minimum thickness requirement results in a 5:1 rate of substitution, and the average substituted bag has a mass of 28 grams, raising the thickness requirement would reduce plastic consumption by 69 tonnes per year in 2018- 19, rising to 77 tonnes in 2024-25.118 This equates to a 7% reduction in the consumption of plastic from shopping bags, garbage bags and produce bags over this period. While these estimates are subject to a high degree of uncertainty, it is likely that increasing the minimum thickness requirement would result in a net reduction in flexible plastic consumption. The substitution rate would have to be ≤2:1 in order for there to be no net reduction. The effectiveness (and acceptability) of the measure could also be enhanced by having exemptions for particular product types or retailers; for example, butchers, fishmongers, poisons and takeaway restaurants. The impact of the projected decrease in plastic bag consumption on litter and other environmental impacts is not known. However, given the small number 118 This assumes substituted bag consumption increases by 1.8% in line with weighted average household consumption growth after 2018-2019. For simplicity, we have also assumed there is no substitution to nonplastic bag types (e.g. calico, jute or paper) or to <35 µm biodegradable bags. 70 of plastic bags in the known ACT litter stream, the scope for further reductions in plastic litter appear to be small. Moreover, the extent of any reduction will depend on other variables, including societal litter behaviours and government and non-government efforts to control litter.

Can't prove any net environmental gain from a plastic bag ban

Andrew Macintosh, Amelia Simpson and Teresa Neeman, 2018, Australia National University Law School, Regulating Plastic Shopping Bags in the Australian Capital Territory, https://envcomm.act.gov.au/wp-content/uploads/2022/04/ACT-Plastic-bag-ban-options-analysis.pdf

Ban plastic shopping bags Broad-based bans on plastic bags have been introduced in a number of jurisdictions, including the city of Bangalore in India, the Indian state of 78 Karnataka, and Kenya. 136 Where these types of bans have been imposed, this has generally been in response to acute problems with plastic bag litter. **Anecdotal reports suggest the success of these types of bans has been variable, with the extent of observed reductions in plastic bag consumption** and environmental impacts depending on the enforcement capacity of governments.137 ***There are also reports of adverse economic and social sideeffects of the complete bans, including obstructions to business activity and the development of black markets for plastic bags.*** **The imposition of a complete ban on plastic bags in the ACT is likely to result in:** • a reduction in plastic bag consumption, the extent of which would depend on the scope of the ban, the penalties for non-compliance and the strictness with which the ban is enforced; **• an increase in consumption of single-use and reusable substitute jute, calico, paper and other similar bags;** • a small change (likely increase) in retailer profits; • a minor increase in household shopping costs due to the need to purchase substitute bags; and • a small increase in the budget impact to government due to the regulatory effort required to introduce and enforce the ban. For these purposes**, we assume the ban would be limited to shopping bags. This would mean it would not cover garbage bags or produce bags. The inclusion of garbage and produce bags within the scope of the ban could give rise to human health risks associated with food hygiene and waste management.** Environmental effectiveness **The imposition of a ban on plastic shopping bags would reduce the consumption of bag-related plastics in the ACT from the six main bag types** (single-use HDPE, reusable HDPE, reusable LDPE, polypropylene, garbage and produce) **by 50**% (approximately 487 tonnes) **in 2018-19.** T**he avoided plastic consumption would grow to almost 541 tonnes per annum in 2024-25.** As with the option of increasing the minimum thickness requirement, the reduction in plastic bag consumption should lead to less plastic in the general environment. However, given the small number of plastic bags in the known ACT litter stream, the scope for further improvements in plastic litter control appear to be small. **The introduction of the ban would increase consumption of substitutes like jute, calico and paper**. Attributional LCAs suggest this shift could have adverse environmental impacts, for example, by increasing greenhouse gas emissions and increasing water use. However, in the absence of a robust consequential LCA, **it is not possible to speculate on the net environmental outcomes associated with the possible substitution of non-plastic bags for plastic in the ACT following the introduction of a broad plastic bag ban.**

Ban Increases Environmental Harm

Turn – people use multi-use bags, which put more pressure on the environment, as single-use
Derek Mak, April, 21, 2023 THREE LESSONS FROM SINGLE-USE PLASTIC BAG BANS, https://www.rila.org/blog/2023/04/three-lessons-from-single-use-plastic-bag-bans,
Our society is at a crossroads when it comes to sustainability and retail. **Laws are being passed within and outside the U.S. to ban single-use plastic bags** and paper bags to combat their environmental impact. **The problem: Now, that reusable bags are prevalent what do consumers do with the mountains of reusable bags they have in their homes**? As noted in a report from The New York Times," **Compared to single-use plastics, the more durable reusable bags are better for the environment only if they are actually reuse**d." If single-use plastic bag bans, and reusable bags aren't breaking consumers out of the single-use mentality, what will? 99Bridges has been in the forefront of solving the single-use plastic bag problem for the past three years. Here are three key insights from my perspective which will help get us on the right path to finally remove single-use plastic bags and single-use mentality from our everyday lives. 1. IT'S NOT THE BAGS, IT'S US! Sooner or later, we will all come to the same conclusion that the issue is not the bags, it is us! Banning single-use plastic bags did not yield the intended outcome – ***reusable or not, most people are using the "bags" as single use***. How many times have you walked into a grocery store and realized that you forgot to bring a bag? The problem multiplies when you order online. Now you have a closet in your house devoted to bags. We've developed a habit of single use because it is easy and convenient. Recognizing this simple fact will help us to make a targeted transition possible. **The alternative to the single use must be an easy, convenient, and rewarding solution.** 2. FOR RETAILERS, PASSING THE BAG COST TO CONSUMERS WON'T HELP. Single-use plastic bag ban is not a shift from cost to profit model for retailers. What used to be a cost item to provide free single use bags to consumers is still a cost item if retailers truly care about the transition to a reuse future. It would be a mistake to take just remove the cost of retail bags and pass it onto customers. That is exactly what a large retail brand I spoke to recently said, "reusable bags are now one of the most profitable items in the store." A better strategy is to deploy the single use bag budget to aid the transition into a fully circular reuse retail bag model. Done correctly, the retailer will see a sustainable business model and a new way to increase customer loyalty. 3. REVERSE LOGISTICS – A KEY TO SUCCESS. What is reverse logistics? According to the Association of Supply Chain Management (ASCM), "Reverse logistics refers to the supply chain process of returning products from end users back through the supply chain to either the retailer or manufacturer." Simply put, it is something that does not exist today at scale. According to a report from Supply Chain Quarterly, "Reverse logistics, or the process for managing product returns, is necessary for most retailers, but takes up valuable resources such as labor, time, budget and inventory space." I would say without reverse logistics, reuse of anything is difficult to attain. 99Bridges created a critical infrastructure component called the Bag Teller Machine (BTM) to enable reverse logistics. It allows people to have a place to conveniently return the reusable bags, track the items being returned, and perhaps get rewards from the participating stores. Visit the BTM webpage to learn more. Make no mistake, enabling reuse for bags is just the beginning. Coffee cups, take-out food containers, and water bottles are next on the horizon. Chances are, we will all get on the right path at some point – a path to a more sustainable future. Happy reuse!

Turn: Multi-use bags are more environmentally damaging than single-use plastics
Heather Caliendo, 2013, February 6, The economic effect of plastic bag bans. Plastics Today. https://www.plasticstoday.com/business/the-economic-effect-of-plastic-bag-bans
One item of concern **with reusable shopping bags are the very cheap reusables that are often given away during promotions or selling at grocery stores for 99 cents," he said. "The concern here is that while they are marketed as reusable shopping bags, they really are just a glorified disposable bag, which we feel is even more damaging than the single-use plastic shopping bags."**

No way for PRO to win net-offense – reusable bags have to be reused hundreds of times to get net reduction!
Rebecca Taylor University of Sydney, School of Economics, Journal of Environmental Economics and Management, Volume 93, January 2019, Pages 254-271, Journal of Environmental Economics and Management, Bag leakage: The effect of disposable carryout bag regulations on unregulated bags, https://www.sciencedirect.com/science/article/abs/pii/S0095069618305291
According to a UK Environmental Agency (2011) study, **a shopper needs to reuse a cotton carryout bag 131 times to have the same global warming potential** (measured in kilograms of CO2 equivalent**) as plastic**

carryout bags with zero reuse, while that same cotton bag needs to be reused 327 times if all plastic carryout bags are reused as bin liners. Thus, a contribution of this paper is to provide an estimate for the reuse of plastic carryout bags that policymakers can use as a benchmark for calculating and interpreting LCA results.

Turn—Shift to multipurpose plastic that uses more plastic

John Hite, June 16, 2020, The Truth about Plastic Bag Bans, Conservation Law Foundation, The Truth about Plastic Bag Bans - Conservation Law Foundation (clf.org), https://www.clf.org/blog/the-truth-about-plastic-bag-bans/#gsc.tab=0

A more recent study from a researcher at the University of Sydney found that California's bag ban led to a moderate increase in paper bag usage and pushed some customers to buy thicker plastic bags. **The study suggests these thicker bags were purchased to replace the secondary use of free, single-use plastic bags as trashcan liners or to pick up pet waste. As a comparison of weight, the study reported that 28.5% of the plastic reduced through a bag ban was offset by shifting consumption to other bags.**

Consumers retaliate by increasing other bad environmental behaviors

Muposhi, et al 2022, 1Department of Marketing Management, Midlands State University, Zimbabwe, Muposhi A, Mpinganjira M, Wait M. Considerations, benefits and unintended consequences of banning plastic shopping bags for environmental sustainability: A systematic literature review. Waste Manag Res. 2022 Mar;40(3):248-261. doi: 10.1177/0734242X211003965. Epub 2021 Apr 20. PMID: 33876669; PMCID: PMC8847762.

The literature also highlighted the unintended consequences of PBB. In particular, PBB was found to have the effect of transferring plastic bag consumption from the regulated public sphere to illegal private spheres (Njeru, 2006; Stephenson, 2018). According to Heidbreder et al. (2019), pressuring citizens to comply with PBB has the effect of triggering the moral hazard of unobservable behaviours, such as illegal dumping.

Answers to: Pro Advocates Banning ALL Plastic Bags

A broader ban on plastic bags would trigger hygiene and health problems

Andrew Macintosh, Amelia Simpson and Teresa Neeman, 2018, Australia National University Law School, Regulating Plastic Shopping Bags in the Australian Capital Territory, https://envcomm.act.gov.au/wp-content/uploads/2022/04/ACT-Plastic-bag-ban-options-analysis.pdf

Ban plastic shopping bags Broad-based bans on plastic bags have been introduced in a number of jurisdictions, including the city of Bangalore in India, the Indian state of 78 Karnataka, and Kenya. 136 Where these types of bans have been imposed, this has generally been in response to acute problems with plastic bag litter. **Anecdotal reports suggest the success of these types of bans has been variable, with the extent of observed reductions in plastic bag consumption** and environmental impacts depending on the enforcement capacity of governments.137 ***There are also reports of adverse economic and social sideeffects of the complete bans, including obstructions to business activity and the development of black markets for plastic bags.138*** **The imposition of a complete ban on plastic bags in the ACT is likely to result in:** • a reduction in plastic bag consumption, the extent of which would depend on the scope of the ban, the penalties for non-compliance and the strictness with which the ban is enforced; **• an increase in consumption of single-use and reusable substitute jute, calico, paper and other similar bags;** • a small change (likely increase) in retailer profits; • a minor increase in household shopping costs due to the need to purchase substitute bags; and • a small increase in the budget impact to government due to the regulatory effort required to introduce and enforce the ban. For these purposes**, we assume the ban would be limited to shopping bags. This would mean it would not cover garbage bags or produce bags. The inclusion of garbage and produce bags within the scope of the ban could give rise to human health risks associated with food hygiene and waste management.**

"Litter' Answers

Bags are responsible for less than 1% of environmental harm

Heather Caliendo, 2013, February 6, The economic effect of plastic bag bans. Plastics Today. https://www.plasticstoday.com/business/the-economic-effect-of-plastic-bag-bans

Some **reports state that plastic bags are responsible for less than 1% of all litter.** For instance, litter audit data from major Canadian municipalities show that plastic shopping ags are less than 1% of litter**. In San Francisco, surveyors found that plastic bags consisted of 0.6% of the city's litter before a local ban was enacted.**

Con – Advantage Answers

Answers to: Choking Deaths

Pro can't solve for plastics being used for murder/suicide…
Choking deaths from plastic bags are typically caused by suicide and/or murder. The Pro can't solve that – they'd find the plastic somewhere or use other objects.

Answers to: Chocking/Deaths from Plastic 2018, Australia National University Law School, Regulating Plastic Shopping Bags in the Australian Capital Territory, ACT-Plastic-bag-ban-options-analysis.pdf

CON -- Kritiks

Coercion Kritik: Contention Shell

Plastic Bag Ban (PBB) environmentally coercive

Muposhi, et al 2022, 1Department of Marketing Management, Midlands State University, Zimbabwe, Muposhi A, Mpinganjira M, Wait M. Considerations, benefits and unintended consequences of banning plastic shopping bags for environmental sustainability: A systematic literature review. Waste Manag Res. 2022 Mar;40(3):248-261. doi: 10.1177/0734242X211003965. Epub 2021 Apr 20. PMID: 33876669; PMCID: PMC8847762.

There was also general consensus in extant literature that the end of plastic shopping bags is not nigh due to their utilitarian benefits, and that **a PBB is coercive and punitive**. In view of this, literature reviewed recommended the promotion of a circular economy focused on ecological modernisation that capacitates companies to engage in sustainable plastic bag manufacturing and recovery strategies such as recycling. **Community-driven approaches such as voluntary initiatives** as opposed to PBB are proposed as an alternative policy tool as they proved to be effective in Chile, Finland and Luxembourg. Such initiatives, when driven by communities, have proved to be effective in promoting environmental citizenship and **reducing the cost of** regulation **enforcement** by the government.

All violations of freedom must be rejected

Petro 74—Professor of Law at NYU (Sylvester, Toledo Law Review, Spring, p. 480, https://www.ethosdebate.com/values-in-policy/

However, one may still insist, echoing Ernest Hemingway - "I believe in only one thing: liberty." And it is always well to bear in mind David Hume's observation: "It is seldom that liberty of any kind is lost all at once." Thus, **it is unacceptable to say that the invasion of one aspect of freedom is of no importance because there have been invasions of so many other aspects. That road leads to chaos, tyranny, despotism, and the end of all human aspiration**. Ask Solzhenitsyn. Ask Milovan Dijas. In sum, **if one believed in freedom as a supreme value** and the proper ordering principle for any society aiming to maximize spiritual and material welfare, **then every invasion of freedom must be emphatically identified and resisted** with undying spirit."

Violation of freedom negates the value of human existence and represents the greatest threat to human survival

Ayn **Rand**, Philosopher, July **1989**, "*The Virtue of Selfishness: A New Concept of Egoism*," p. 145

A society that robs an individual of the product of his effort, or enslaves him, or attempts to limit the freedom of his mind, or compels him to act against his own rational judgment, a society that sets up a conflict between it's ethics and the requirements of man's nature – is not, strictly speaking, a society, but a mob held together by institutionalized gang-rule. Such a society destroys all values of human coexistence, has no possible justification, and represents, not a source of benefits, but the deadliest threat to man's survival. Life on desert island is safer than and incomparably preferable than existence in Soviet Russia or Nazi Germany.

It's our moral imperative to never compromise our goals toward liberty
We must be fully committed toward ending coercive measures of the state. We have a moral imperative to never compromise our goals toward liberty

Rothbard, former teacher at Brooklyn Polytechnic Institute, 78

(Murray, For A New Liberty, "A Strategy for Liberty," www.mises.org/rothbard/newliberty14.asp, date accessed: 7/9/08)

There is another grave flaw in the very idea of a comprehensive planned program toward liberty. For the very care and studied pace, the very all-embracing nature of the program, implies that the State is not really the common enemy of mankind, that it is possible and desirable to use the State for engineering a planned and measured pace toward liberty. The insight that the State is the major enemy of mankind, on the other hand, leads to a very different strategic outlook: namely, that libertarians should push for and accept with alacrity any reduction of State power or activity on any front. Any such reduction at any time should be a welcome decrease of crime and aggression. Therefore, the libertarian's concern should not be to use the State to embark on a measured course of destatization, but rather to hack away at any and all manifestations of statism whenever and wherever he or she can. In keeping with this analysis, the National Committee of the Libertarian party in October 1977 adopted a declaration of strategy which included the following: **We must hold high the banner of pure principle, and never**

compromise our goal?. The moral imperative of libertarian principle demands that tyranny, injustice, the absence of full liberty, and violation of rights continue no longer. Any intermediate demand must be treated, as it is in the Libertarian Party platform, **as pending achievement of the pure goal and inferior to it. Therefore, any such demand should be presented as leading toward our ultimate goal, not as an end in itself.** Holding high our principles means avoiding completely the quagmire of self-imposed, obligatory gradualism: We must avoid the view that, in the name of fairness, abating suffering, or fulfilling expectations, we must temporize and stall on the road to liberty. Achieving liberty must be our overriding goal. **We must not commit ourselves to any particular order of destatization, for that would be construed as our endorsing the continuation of statism and the violation of rights. Since we must never be in the position of advocating the continuation of tyranny, we should accept any and all destatization measures wherever and whenever we can.** Thus, **the libertarian must never allow himself to be trapped into any sort of proposal for "positive" governmental action; in his perspective, the role of government should only be to remove itself from all spheres of society just as rapidly as it can be pressured to do so.** Neither should there be any contradictions in rhetoric**. The libertarian should not indulge in any rhetoric, let alone any policy recommendations, which would work against the eventual goal.** Thus, suppose that a libertarian is asked to give his views on a specific tax cut. **Even if he does not feel that he can at the moment call loudly for tax abolition, the one thing that he must not do is add to his support of a tax cut such unprincipled rhetoric as, "Well, of course, some taxation is essential?," etc. Only harm to the ultimate objective can be achieved by rhetorical flourishes which confuse the public and contradict and violate principle.**

Environmental Regulation Link Extensions

Environmental regulations constitute takings under property rights law

William E. Re**mphrey,** Jr., 19**93,** Villanova Environmental Law Journal, HENDLER V. UNITED STATES: PRESERVING PRIVATE PROPERTY RIGHTS IN THE FACE OF ENVIRONMENTAL REGULATION**, p. 465-6**

In Hendler v. United **S**tates n1 the Court of Appeals for the Federal Circuit wrestled with the present status of takings jurisprudence. **The court found that intrusions of the Environmental Protection Agency (EPA) upon private property rights constituted a Fifth Amendment taking**. The government may legitimately seize property in one of two ways: (1) by eminent domain; n4 or (2) by the police powers-based nuisance exception to the Just Compensation Clause of the Fifth Amendment. The government action at issue in Hendler II falls into the second category. However, **it does not necessarily follow that a government regulation, even when set forth as advancing public health, safety, or welfare, will be held as a legitimate exercise of police powers**. The manner in which the court of appeals dealt with the takings issues in Hendler II may signal a growing reluctance by courts to sanction uninhibited governmental intervention onto private property without the payment of just compensation. Judicial reluctance to sanction governmental intervention is present even when the purpose of the intrusion is to cure the land of severe environmental damage. **Such judicial temperament toward regulatory solutions to environmental problems in land use reflects the importance of and deference to private property rights.** This disposition is significant because courts are willing to defend traditional private property rights despite the tremendous need and urgency to clean up the countless environmental tragedies that have occurred. Hendler II did not resolve the underlying conflict between old legal principles and the relatively recent rise of environmental law. However, the holding in Hendler II indicates that private property rights are not dead even though the land itself might be.

Environmental regulations undermine property rights

Steven **Eagle**, 20**13**, Professor of Law, George Mason University, George Mason Law Review, A PROSPECTIVE LOOK AT PROPERTY RIGHTS AND ENVIRONMENTAL REGULATION, p. 724

In considering the future of environmental and natural resources law, it is no surprise that **environmental supporters might treat property rights as incidental to the enterprise**. Indeed, **government agencies with environmental missions are prone to discuss property right**s, if at all, **only in the context of the potential for inverse condemnation litigation**, and to honor property rights only to the extent necessary to avoid having to pay just compensation for their appropriation. **Environmental issues are particularly amenable to incidental treatment of property rights, since conventional understandings of property often emphasize its attribute that permits an owner to exclude others**. **This gives short shrift to alienability**, **another important attribute of "property**." n187 For present purposes, however, **the overwhelming aspect of "property" that often is neglected in environmental law is the attribute of use.**

Environmentalist doctrines are intellectual toxins administered at great cost to human liberty; we are now at a crossroads, failure to uphold the freedoms of free market capitalism will spell the end of civilization

George **Reisman**, Ph.D. is Professor of Economics at Pepperdine University's Graziadio School of Business and Management, **2001,** The Toxicity of Environmentalism,
http://www.capitalism.net/Environmentalism's%20Toxicity.htm

What the cultural acceptance of a doctrine as irrational as environmentalism makes clear is that the real problem of the industrialized world is not "environmental pollution" but philosophical corruption. The so-called intellectual mainstream of the Western world has been fouled with a whole array of intellectual toxins resulting from the undermining of reason and the status of man [or woman], and which further contribute to this deadly process. Among them, besides environmentalism, are collectivism in its various forms of Marxism, racism, nationalism, and feminism; and cultural relativism, determinism, logical positivism, existentialism, linguistic analysis, behaviorism, Freudianism, Keynesianism, and more. These doctrines are intellectual toxins because they constitute a systematic attack on one or more major aspects of the requirements of human life and well-being. Marxism results in the kind of disastrous conditions now prevailing in Eastern Europe and the Soviet Union. All the varieties of collectivism deny the free will and rationality of the individual and attribute his [or her] ideas, character, and vital interests to his membership in a collective: namely, his membership in an economic class, racial group, nationality, or sex, as the case may be, depending on the specific variety of collectivism. Because they view ideas as determined by group membership, these doctrines deny the very possibility of

knowledge. Their effect is the creation of conflict between members of different groups: for example, between businessmen [or women] and wage earners, blacks and whites, English speakers and French speakers, men and women. Determinism, the doctrine that man's actions are controlled by forces beyond his power of choice, and existentialism, the philosophy that man is trapped in a "human condition" of inescapable misery, lead people not to make choices they could have made and which would have improved their lives. Cultural relativism denies the objective value of modern civilization and thus undercuts both people's valuation of modern civilization and their willingness to work hard to achieve personal values in the context of it. The doctrine blinds people to the objective value of such marvelous advances as automobiles and electric light, and thus prepares the ground for the sacrifice of modern civilization to such nebulous and, by comparison, utterly trivial values as "unpolluted air." Logical positivism denies the possibility of knowing anything with certainty about the real world. Linguistic analysis regards the search for truth as a trivial word game. Behaviorism denies the existence of consciousness. Freudianism regards the conscious mind (the "Ego") as surrounded by the warring forces of the unconscious mind in the form of the "Id" and the "Superego," and thus as being incapable of exercising substantial influence on the individual's behavior. Keynesianism regards wars, earthquakes, and pyramid building as sources of prosperity. It looks to peacetime government budget deficits and inflation of the money supply as a good substitute for these allegedly beneficial phenomena. Its effects, as the present-day economy of the United States bears witness, are the erosion of the buying power of money, of credit, of saving and capital accumulation, and of the general standard of living. These intellectual toxins can be seen bobbing up and down in the "intellectual mainstream," just as raw sewage can be seen floating in a dirty river. Indeed, they fill the intellectual mainstream. Virtually, every college and university in the Western world is a philosophical cesspool of these doctrines, in which intellectually helpless students are immersed for several years and then turned loose to contaminate the rest of society. These irrationalist doctrines, and others like them, are the philosophical substance of contemporary liberal arts education. Clearly, the most urgent task confronting the Western world, and the new intellectuals who must lead it, is a philosophical and intellectual cleanup. ***Without it, Western civilization simply cannot survive. It will be killed by the poison of environmentalism.*** To accomplish this cleanup, only the most powerful, industrial-strength, philosophical and intellectual cleansing agents will do. These cleansing agents are, above all, the writings of Ayn Rand and Ludwig von Mises. These two towering intellects are, respectively, the leading advocates of reason and capitalism in the twentieth century. A philosophical-intellectual cleanup requires that all or most of their writings be introduced into colleges and universities as an essential part of the core curriculum, and that what is not included in the core curriculum be included in the more advanced programs. The incorporation of the writings of Ayn Rand and Ludwig von Mises into a prominent place in the educational curriculum is the central goal that everyone should work for who is concerned about his cultural environment and the impact of that environment on his life and well-being. Only after this goal is accomplished, will there be any possibility that colleges and universities will cease to be centers of civilization-destroying intellectual disease. Only after it is accomplished on a large scale, at the leading colleges and universities, can there be any possibility of the intellectual mainstream someday being clean enough for rational people to drink from its waters. The 21st Century should be the century when man [and woman] begins the colonization of the solar system, not a return to the Dark Ages. Which it will be, will depend on the extent to which new intellectuals can succeed in restoring to the cultural environment the values of reason and capitalism.

Environmental regulations are paternalistic sacrifice of the autonomy of individuals to privileged environmentalist ideals

John Earl **Duke**, J.D. Candidate, Boston University, February **2003**
Boston University Law Review, Giving *Species the Benefit of the Doubt*, 83 B.U.L. Rev. 209

As a consequence, giving species the benefit of the doubt facilitates paternalistic rulemaking under the guise of "preventing" harm. Paternalism is "roughly the interference with a person's liberty of action justified by reasons referring exclusively to the welfare, good, happiness, needs, interests, or values of the person being coerced." 194 Some environmentalists use the ESA to restrict various land use projects because they think it is better, not just for themselves, but also for those who wish to engage in these projects. This is vividly exemplified by the Sierra Club's letter to FWS quoted earlier: "Adding the Barton Springs salamander to the list of endangered species will slow development to a sustainable level in one part of town - but overall the area will benefit by preserving a small bit of nature in the heart of the city." 195 However, "where the imposition of paternalistic duties is justified, this is often accounted for because individuals have a right against the authority (e.g., the State) that it shall protect them against their own folly, neglect, or ignorance." 196 As argued above, giving species the benefit of the doubt does not protect anyone against their own folly, neglect, or

ignorance because when the data are inconclusive, FWS is just as ignorant as everyone else. Thus, giving species the benefit of the doubt results in unjustified, paternalistic restrictions on autonomy. In contrast, a rule giving landowners and developers the benefit of the doubt will help protect and promote our interests in autonomy and species security because such a rule allows them to decide on their own what to do, unless the available data indicate that it is more likely than not that a species is endangered or threatened, or that any particular action will actually harm a [*247] species. In other words, a much more sensible and defensible solution is to switch the burden of proof. As Gerald Dworkin has argued, "In all cases of paternalistic legislation there must be a heavy and clear burden of proof placed on the authorities to demonstrate the exact nature of the harmful effects (or beneficial consequences) to be avoided (or achieved) and the probability of their occurrence." 197 Or, as Hart has argued: Recognition of individual liberty as a value involves, at a minimum, acceptance of the principle that the individual may do what he wants, even if others are distressed when they learn what it is he does - unless, of course, there are other good grounds for forbidding it. 198

Federal regulation of ecosystems would be a substantial increase in governmental control
J.B. **Ruhl**, Assistant Professor of Law, Southern Illinois University, Summer **1995**
Colorado Law Review, Biodiversity conservation and the ever expanding web of Federal Laws regulating non-federal lands: Time for something completely different? 66 U. Colo. L. Rev. 555
Indeed, there is by no means unanimous support that the federal government should have any meaningful role in shaping national biodiversity policy. For example, the Cato Institute advocates a federal biodiversity policy relying on maximum use of "noncoercive market processes." 15 That policy proposal, [*564] which has appeared to galvanize those who lean against an active federal role, is premised on a trio of assertions: that "the ecosystem concept . . . is inappropriate for use as a geographic guide for public policies," that "federal management of ecosystems would ***significantly expand federal control of the use of privately owned land,***" and that "greater reliance on market forces, rather than further movement toward coercive federal regulations . . . should guide federal actions." 16 Although the second of those propositions accurately defines the central defect of federal policy at present, this article demonstrates that the first and last of those premises are, at best, half true, and thus do not lead us in the direction of a passive federal policy role. Hence, as much as this article demonstrates that federal biodiversity policy thus far has been excessively coercive, it also demonstrates that a "no action" policy at the federal level is not a viable policy alternative. The question is what the federal government's proper role should be.

Government Intervention in the market over environmental policy violates property rights
Sebastian **Storfner 2004** CAN MARKET FORCES SOLVE ENVIRONMENTAL PROBLEMS? NEOCLASSICAL VS. AUSTRIAN ANALYTICS University of Central England, Birmingham, U.K.
In contrast to that, for Austrians **government interventions are inconsistent with free markets and environmental problems are not due to market but to government failures since "government (…) has failed grievously to exercise its defence function"**37. Ultimately, **pollution is due to interpersonal conflicts, which neither taxes (central planning) nor tradable permits (violation of property rights) can resolve**. Because of this, Austrians offer three solutions: **Privatisation and the 'first come first served' principle to define property rights and the 'polluter pays' principle in order to enforce them**. For sure, no theory is without controversy but it is fairly save to conclude that **environmental problems could be solved by market forces and do not need government intervention since only markets effectively resolve interpersonal conflicts, something governments failed to achieve for centuries.**

Environmental regulations violate property rights
Ledford 01, Author(s): Kenneth F. Ledford Reviewed work(s): Property and Freedom by Richard Pipes Source: The Journal of Modern History, Vol. 73, No. 1, (Mar., 2001), pp. 147-150 this is a book reviewhttp://www.jstor.org/stable/pdfplus/3079660.pdf
"But **the well-intentioned measures of democratic social welfare have also encroached on both property and freedom-more elusively** and certainly less violently, **but in the long run perhaps no less dangerously." The welfare state, in Pipes's view, has violated private property in so many ways that it increasingly approximates conditional tenure** (p. 232). Taxation impermissibly takes from one individual property to redistribute it to the propertyless; **environmental regulation amounts to a "taking" without compensation**; social insurance violates freedom by breeding dependence; and freedom of contract has been derogated in manifold ways since 1937, resulting in evils such as the minimum wage, rent control, the Community Reinvestment Act, and es- pecially affirmative action, which violates the basic human freedom of the power to discriminate. Although the twentieth century saw democracy's victory over totalitari- anism, "even

in democratic societies the concept of property has undergone substantial revision, transforming it from absolute dominion into something akin to conditional possession, and . . . as a result, the rights of individuals to their assets have been and continue to be systematically violated

Environmental regulations are coercive and prevent policy innovation- turns the case
Anderson and Leal, Political Economy Research Center, **94** (Terry L. and Donald L. *Regulation: The Cato Review of Business & Government*, Spring, "Enviro-Capitalism vs. Environmental Statism", http://www.cato.org/pubs/regulation/reg17n2-anderson.html, 7/15/08)
Free-market environmentalism challenges the status quo by offering a way of "rethinking the way we think" about environmental problems. Most of us accept that food, housing, and the production of other basic necessities are best left to the marketplace. Why not the environment? Even environmental problems offer profit niches to the environmental entrepreneur who can define and enforce property rights. Political solutions may be called for in cases where the costs of establishing property rights are presently insurmountable, but there is no reason to begin with the premise that only command and control can produce environmental quality. To the contrary, **free-market environmentalism points out that it is often "bureaucracy versus the environment" and that political solutions become so entrenched that they often stand in the way of innovative market solutions. Overcoming the mindset of environmental statism is no small task because this has been the dominant paradigm for environmental policy formulation for nearly a century. Moving beyond the status quo will require forming new coalitions and abandoning the anti-market mind-set. This has happened with water allocation** because fiscal conservatives and environmentalists have found a common ground. **Federal involvement in massive** water **projects** designed to make the desert bloom like a rose **seldom pass cost-benefit muster and generally wreak environmental havoc**. Because of this, progress has been made in removing water allocation from the political agenda and turning it over to market forces. Even in the case of enhancing stream flows **for environmental purposes, there is growing evidence that markets can outperform politics. "We are all environmentalists now" because we in the United States and other wealthy western countries can afford to demand (as opposed to command) environmental quality**. The basic premises of free-market environmentalism are 1) **that environmental quality comes with increased wealth and 2) that free markets provide the incentive structure for increasing wealth and for producing environmental amenities. If coercive environmentalists with their elitist agendas continue to dominate environmental policy, the likelihood is that we will eventually have less wealth and fewer amenities.** Of the three alternatives reviewed by Kellogg, **only free-market environmentalism offers the prospect of more wealth, more amenities, and more freedom, the scarcest resource of all.**

Coercive environmental regulations rely on command and control over the market
Glicksman, Professor of Law, **and Earnhart** Associate Professor, Economics, **07**
(Robert L, Dietrich H, DEPICTION OF THE REGULATOR-REGULATED ENTITY RELATIONSHIP IN THE CHEMICAL INDUSTRY: DETERRENCE-BASED V. COOPERATIVE ENFORCEMENT, William & Mary Envtl. L. & Pol'y Rev, Vol: 3, May, P. 17)
An alternative model of environmental enforcement is the cooperative model. According to one account, this model is a "reaction to the adversarial enforcement methods suggested by the deterrence model."41 **The cooperative model emphasizes compliance, not the deterrence of noncompliance**. Accordingly, the primary function of an inspection may not be, as it is under the deterrence model, to accumulate evidence of violations for subsequent enforcement actions, but rather to provide advice to regulated entities as a means of facilitating compliance. **Under this approach, an inspection serves largely as an opportunity to resolve problems.**42 **Cooperative enforcement approaches have been described as an example of "negotiate and control," as compared with the traditional "command and control" environmental regulatory regime with** which **coercive enforcement** has traditionally been associated.43 **Under** both the **coercive** and cooperative **models, facility inspections and enforcement actions serve as threats.** Under the coercive model, **the general deterrent effect of an inspection or an enforcement action of one facility derives exclusively from the threat it creates for other facilities that may be the subject of similar actions in the future.** Under the cooperative model of enforcement, however, regulated facilities may be afforded more opportunities to avoid sanctions by resolving noncompliance before a penalty is assessed or other enforcement action pursued than under the coercive model. A cooperative regulator might even withdraw a pending sanction for past noncompliance once compliance has been achieved. Such a regulator may choose to refrain from sanctioning a facility that has violated its NPDES permit as a result of a cooperative history between the

regulator and the facility. As a result, the cooperative approach "emphasizes flexible or selective enforcement that takes into consideration the particular circumstances of an observed violation."44 **Indeed, "[l]evying penalties is seen as a mark of the [cooperative] system's failure (to otherwise obtain compliance); compliance systems rely far more on rewards and incentives than penalties."**45

Centralized regulations fail and are coercive

Jonathan H. **Adler**, 200**4**, Associate Professor and Associate Director of the Center for Business Law & Regulation, Case Western Reserve University School of Law, Case Western University Law Review, Fall, SYMPOSIUM: THE ROLES OF MARKETS AND GOVERNMENTS: The Fable Of Federal Environmental Regulation: Reconsidering The Federal Role In Environmental Protection, p 106-7

Current environmental programs exhibit most of the failings of Soviet-style command-and-control systems: rigidity, inefficiency, diminishing marginal returns, and poor prioritization. This may be the inevitable consequence of adopting a centralized, command-and-control regulatory framework to address environmental concerns. **Federal regulatory agencies are delegated the authority to set environmental goals n60 and prescribe the methods that may be used for their attainment. As Professor Stewart notes, this approach has become "nothing less than a massive effort at Soviet-style planning of the economy** to achieve environmental goals" n61 The problem is that such ecological central-planning cannot succeed any better than its discredited economic cousin. Indeed, the likelihood of long-term success is even less in the environmental context; planning the "production" of environmental "goods," such as air quality, wilderness, or whatever else, is orders of magnitude more complex than planning the production of shoes or wheat. **Centralized regulatory agencies are ill-equipped to handle the myriad ecological interactions triggered or impacted by private activity**. No doubt the first generation of environmental regulations produced some significant gains -- **just as the Soviet economies once appeared productive. Over Time, however, every centrally planned economy collapsed under its own weight. As centralized environmental regulations reach their limit, they too begin to falter. The excessive centralization of environmental policy in the hands of a federal regulatory bureaucracy is the central failing of conventional environmental policy**.

Linear

Each new step of coercion must be resisted – it moves us one step further along road of oppression
Browne, 1995 (Harry, Former Libertarian Party candidate for President and Director of Public Policy for the DownsizeDC.org, Why Government Doesn't Work, p.65-66, JMP)
Escalation Each increase in coercion is easier to justify. If it's right to force banks to report your finances to the government, then it's right to force you to justify the cash in your pocket at the airport. If it's right to take property from the rich to give to the poor, then it's right to take your property for the salt marsh harvest mouse. As each government program fails, it becomes "necessary" to move another step closer to complete control over our lives. As one thing leads to another - as coercion leads to more coercion - what can we look forward to? • Will it become necessary to force you to justify everything you do to any government agent who thinks you might be a threat to society? • Will it become necessary to force your children to report your personal habits to their teachers or the police? • Will it become necessary to force your neighbors to monitor your activities? • Will it become necessary to force you to attend a reeducation program to learn how to be more sensitive, or how not to discriminate, or how to avoid being lured into taking drugs, or how to recognize suspicious behavior? • Will it become necessary to prohibit some of your favorite foods and ban other pleasures, so you don't fall ill or have an accident - putting a burden on America's health-care system? Some of these things - such as getting children to snitch on their parents or ordering people into reeducation programs - already are happening in America. The others have been proposed and are being considered seriously. History has shown that each was an important step in the evolution of the world's worst tyrannies. We move step by step further along the road to oppression because each step seems like such a small one. And because we're told that each step will give us something alluring in return-less crime, cheaper health care, safety from terrorists, an end to discrimination - even if none of the previous steps delivered on its promise. And because the people who promote these steps are well-meaning reformers who would use force only to build a better world.

The impact is linear – the stronger the government becomes the more liberty is lost
Bovard, 95 (James, journalist for the New York Times, Wall Street Journal and Newsweek, Lost Rights: The Destruction of American Liberty, p.333-334, JMP)

Liberty by itself will not create an ideal society. As Friedrich Hayek observed, "The results of freedom must depend on the values which free individuals pursue." Unfortunately, the more powerful government has become, the more likely the people's values are to be debased. Current tax and welfare policy maximizes the rewards for dependency and the penalties for self-reliance. There is a great deal that people can do to help themselves and to help their neighbors and those in need. But the more powerful government has become, the more people devote their attention to Washington rather than to their own efforts. John Stuart Mill wrote in 1859: the most cogent reason for restricting the interference of government is the great evil of adding unnecessarily to its power. Every function superadded to those already exercised by the government causes its influence over hopes and fears to be more widely diffused, and converts, more and more, the active and ambitious part of the public into hangers-on of the government, or of some party which aims at becoming the government .6 We have paid dearly for idealizing the state. There is no virtue in denying the law of gravity, and there should be no virtue in denying the limitations of government. Good intentions are no excuse for perpetual failure and growing oppression. The more we glorify government, the more liberties we will lose. Freedom is largely a choice between allowing people to follow their own interests or forcing them to follow the interests of bureaucrats, politicians, and campaign contributors. This is the soul of the debate between liberty and pseudopaternalism, between letting people build their own lives and forcing them to build their lives as politicians dictate.

Each rejection of government coercion & endorsement of non-aggression helps change the system
Ruwart, 93 (Dr. Mary J. Ruwart, Senior Scientist at a major pharmaceutical firm and a former Assistant Professor of Surgery at St. Louis University Medical School, Healing Our World: The Other Piece of the Puzzle, p.281-282, JMP)

CHOOSING YOUR PATH If you've read this far, you are undoubtedly interested in seeing at least some aspects of non-aggression implemented. Several ideas may seem more relevant to you than others. If you are wondering whether a lone individual like yourself can make a difference, please be assured that you can. Even the smallest contribution can be pivotal. My favorite story illustrating this point is about a blacksmith who failed

to put the final nail in a horse's shoe. For lack of a nail, the horse lost his shoe and went lame. The rider, who was carrying critical news to his king, had to continue on foot. As a result, he reached his sovereign too late. Without this important information, the king lost the battle he was fighting and the kingdom fell to invaders. The humble black-smith was pivotal to the safety of the kingdom. Never doubt that your contribution is just as important. Remember that the family and friends who talk with you about the win-win world possible through non-aggression will in turn talk to others, who will share the good news. Like a chain reaction, your message of hope will spread throughout our country and the world, bearing fruit in the most unexpected ways. If you do nothing more than extol the virtues of non-aggression to those around you, you will have done much toward manifesting it! Of course, you needn't stop there. The many groups cited above would welcome your participation. Are there any that excite you? Would you like to join a political campaign or speak on college campuses? Do you perceive a need for other strategies that you could initiate on your own or with others? Can you implement non-aggressive solutions in the midst of aggression-through-government, much like Guy Polheus and Kimi Gray did (Chapter 11: Springing the Poverty Trap)? All these things-and more-are needed to help others recognize that non-aggression is in every-body's best self-interest. We each have a part to play, a gift to the world that will one day be reflected back to us as better world. Our world is a joint creation. We all have the power to affect those around us profoundly. Each of us through our own inner wisdom can identify the piece of the puzzle that we can lay in the mosaic. Every piece is needed to construct the whole; never doubt that what you can do, however small it may seem to you, is essential. I urge you to embrace whatever aspect of non-aggression seems most valuable to you and appropriate to your unique talents. Whether you work behind the scenes or in the limelight, rest assured that the world will take notice. Whatever way you feel moved to participate is a gift you give to yourself and others. Let me be the first to thank you for making the world a better place!

Kritiks – Capitalism –

Plastics is baked into the model of capitalism

Plastics are baked into capitalism

NANJALA NYABOLA, April 18, 2023, The Nation, Nothing Encapsulates the False Promise of Capitalism Like Plastic, https://www.thenation.com/article/environment/plastic-recycling-capitalism/

. **The plastics crisis represents what happens when we stop seeing the world as geographically and temporally interconnected. We are deliberately led believe that consumption is a net positive. Standard economic theory tells us that without mass individual consumption, there is no economic growth. In wealthy countries especially, people are encouraged to believe that consumption symbolizes progress. If you don't replace your phone every 12 months, the tech company's profit flatlines, and this has a knock-on effect on the nation's economy. Don't worry about the old thing; just put the problem in a colored bin and forget about it.** ***The plastic crisis is built into the economic model***. **Waste is an inevitable consequence of a system that stops at the value of consumption and refuses to acknowledge the waste that comes from it. Chasing fashion trends and replacing electronics every few months is not a consequence-free lifestyl**e. We must reframe the place that unchecked consumption and the abstraction of its waste have in our idea of what it means to be human. The plastic problem is a failure that cannot be fixed by anything short of a fundamental reorganization of our lives. I'm keenly aware that this is a huge demand, but the more you read the more you realize the time for alternatives has passed. When I left Madagascar, I tried to make small incremental transformations in my own life—bar soap instead of shower gel, bamboo toothbrushes, no more clingfilm, things like that. But when my phone got damaged, I still had to buy a new one, because the manufacturer does not repair phones that are more than four years old, and every "Phone Guy" said the parts would be too expensive to try a repair. Individual good intentions can carry us only so far when the system is stacked in favor of the status quo. It's time to let individual action be additive to the energy we put into changing the system.

CON -- Disadvantages

Health

A broader ban on plastic bags would trigger hygiene and health problems

Andrew Macintosh, Amelia Simpson and Teresa Neeman, 2018, Australia National University Law School, Regulating Plastic Shopping Bags in the Australian Capital Territory, https://envcomm.act.gov.au/wp-content/uploads/2022/04/ACT-Plastic-bag-ban-options-analysis.pdf

Ban plastic shopping bags Broad-based bans on plastic bags have been introduced in a number of jurisdictions, including the city of Bangalore in India, the Indian state of 78 Karnataka, and Kenya. 136 Where these types of bans have been imposed, this has generally been in response to acute problems with plastic bag litter. **Anecdotal reports suggest the success of these types of bans has been variable, with the extent of observed reductions in plastic bag consumption** and environmental impacts depending on the enforcement capacity of governments.137 ***There are also reports of adverse economic and social sideeffects of the complete bans, including obstructions to business activity and the development of black markets for plastic bags.138*** **The imposition of a complete ban on plastic bags in the ACT is likely to result in:** • a reduction in plastic bag consumption, the extent of which would depend on the scope of the ban, the penalties for non-compliance and the strictness with which the ban is enforced; **• an increase in consumption of single-use and reusable substitute jute, calico, paper and other similar bags;** • a small change (likely increase) in retailer profits; • a minor increase in household shopping costs due to the need to purchase substitute bags; and • a small increase in the budget impact to government due to the regulatory effort required to introduce and enforce the ban. For these purposes**, we assume the ban would be limited to shopping bags. This would mean it would not cover garbage bags or produce bags. The inclusion of garbage and produce bags within the scope of the ban could give rise to human health risks associated with food hygiene and waste management.**

Economy: Consumer Confidence

Plastic bag bans hurt consumers

Andrew Macintosh, Amelia Simpson and Teresa Neeman, 2018, Australia National University Law School, Regulating Plastic Shopping Bags in the Australian Capital Territory, https://envcomm.act.gov.au/wp-content/uploads/2022/04/ACT-Plastic-bag-ban-options-analysis.pdf

The plastic bag ban has increased household shopping costs, mainly by prompting the substitution from free single-use HDPE bags to costed reusable bags. However, increases in household shopping costs have been relatively small, both because of the price of the substitutes and the capacity for shoppers to minimise financial impacts by reducing bag consumption. On the basis of the scenarios described in section 6.2, the aggregate net increase in household shopping costs in 2017-18 (relative to what they would have been if the ban was not introduced) was approximately $696,000, or around $4.20 per household per annum. The scenario analysis suggests most of this increase (84%) is attributable to the relative increase in expenditure on HDPE bags and garbage bags rather than reusable LDPE and polypropylene bags.

Economy: Unemployment

Bans increased unemployment

Muposhi, et al 2022, 1Department of Marketing Management, Midlands State University, Zimbabwe, Muposhi A, Mpinganjira M, Wait M. Considerations, benefits and unintended consequences of banning plastic shopping bags for environmental sustainability: A systematic literature review. Waste Manag Res. 2022 Mar;40(3):248-261. doi: 10.1177/0734242X211003965. Epub 2021 Apr 20. PMID: 33876669; PMCID: PMC8847762.

The review showed that an outright ban on plastic bags triggered a host of challenges that were unforeseen during the policy's promulgation. Examples of such unintended consequences included job losses resulting from disinvestments in the plastic industry, health and hygiene problems resulting from the increased use of unwashed reusable shopping bags. Job losses, disinvestment in the plastic industry. Internationally, ban was estimated to affect 62,000 companies, 1.45 million job losses and US$350 billion revenue loss (Karlaite, 2016). Kenyan Association of Manufacturers reported a 60–90% job loss in the plastic industry (Behuria, 2019). Juiping Huaqiang Plastics, a leading plastic manufacturing company in China laid off thousands of employees (He, 2012).

Health

Bans caused health problems

Muposhi, et al 2022, 1Department of Marketing Management, Midlands State University, Zimbabwe, Muposhi A, Mpinganjira M, Wait M. Considerations, benefits and unintended consequences of banning plastic shopping bags for environmental sustainability: A systematic literature review. Waste Manag Res. 2022 Mar;40(3):248-261. doi: 10.1177/0734242X211003965. Epub 2021 Apr 20. PMID: 33876669; PMCID: PMC8847762.

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Spending/Deficit

Enforcement is costly

Muposhi, et al 2022, 1Department of Marketing Management, Midlands State University, Zimbabwe, Muposhi A, Mpinganjira M, Wait M. Considerations, benefits and unintended consequences of banning plastic shopping bags for environmental sustainability: A systematic literature review. Waste Manag Res. 2022 Mar;40(3):248-261. doi: 10.1177/0734242X211003965. Epub 2021 Apr 20. PMID: 33876669; PMCID: PMC8847762.

The PBB is also criticised for imposing a monitoring and enforcement burden on national governments, often with hefty costs (Stephenson, 2018).

Black market sales mean a loss of the tax base

Muposhi, et al 2022, 1Department of Marketing Management, Midlands State University, Zimbabwe, Muposhi A, Mpinganjira M, Wait M. Considerations, benefits and unintended consequences of banning plastic shopping bags for environmental sustainability: A systematic literature review. Waste Manag Res. 2022 Mar;40(3):248-261. doi: 10.1177/0734242X211003965. Epub 2021 Apr 20. PMID: 33876669; PMCID: PMC8847762.

National governments losing tax revenue due to the growth of plastic bag black market (Behuria, 2019; Chitotombe, 2014; Taylor, 2019).

Manufacturing

Bans disrupt manufacturing

Rhoads, 2020, March 20, Brendan Rhoads is a Research Analyst with Freedonia Custom Research, where he is responsible for both primary and secondary research activities, the analysis and synthesis of data, and the organization and delivery of internal and client project deliverables. He holds a bachelor's degree from Kent State University with a concentration in Economics and Data Analytics, Market Disruptions: Single-Use Plastic Bans and Supply Chain Considerations, https://www.freedoniagroup.com/blog/market-disruptions-single-use-plastic-bans-and-supply-chain-considerations

In response to individual **SUP bans**, manufacturers may need to consider various initial responses, including broadening their product lines, shifting production schedules and re-evaluating existing supply contracts. An alternative **material will have different profit margins than previously sold plastics and may make for difficult strategic decision-makin**g. Even if disposable product manufacturers choose to maintain their current mix of material offerings, **new legislations with that impact significant consumer populations have unpredictable early effects on production planning**. Additionally, manufacturers must evaluate the full scope of their supply chains, including how direct sales are approached (when applicable), the current status of distributor relationships, and shipping or logistical considerations. Distributor Level Manufactured single-use plastic products follow a designated supply chain to reach end-users such as consumers and food establishments. **Foodservice distributors, in particular, often assist with logistical and sales considerations across the supply chain, to connect manufacturers with their target end-markets. Distributors providing that service may need to form new relationships with suppliers in areas where there is a larger short-term need for alternative-material products. Additionally, foodservice distributors may need to reorganize the supply routes that serve regulated markets. This reorganization may involve a variety of measures, including designing unique supply chains with their own suite of shipping and logistical services. For example, a major metropolitan area may choose to ban plastic straws and stirrers, yet locales right outside the city may not. A distributor that once made a clean sweep with one truck to all locales outside Seattle and the city itself now cannot, due to dramatically different laws in the neighboring areas.**

Inflation

Plastics ban results in price increases and inflation

Energy & Commerce Subcommittee, June 30, 2022, Press Release,
https://energycommerce.house.gov/posts/leader-rodgers-banning-plastic-will-make-supply-chain-and-inflation-crisis-worse

Leader Rodgers: **Banning Plastic will Make Supply Chain and Inflation Crisis Worse**

Jun 30, 2022 Environment, Manufacturing, & Critical Materials Press Release Hearings Washington, D.C. — Energy and Commerce Committee Republican Leader Cathy McMorris Rodgers (R-WA) delivered remarks in today's Subcommittee on Environment and Climate Change hearing on recycling and Democrats' attempts to ban the manufacture of critical plastics. Excerpts and highlights from her prepared remarks: RESTORING TRUST IN REPRESENTATIVE GOVERNMENT "First, I want to address the Supreme Court decision today that confirmed EPA has been acting outside its statutory authority when issuing overreaching rules on the nation's power sector. "This decision is a victory for Article I and representative government. "It's Congress's clear constitutional authority to make the law – not unelected bureaucrats in the executive branch, who abused their power by issuing regulations that place harsh burdens on our economy and people's livelihoods." BIDEN'S ENERGY CRISIS "We are facing inflation and energy crises, with gas prices at all-time highs and trips to the grocery store busting the budgets of American families. "Like for example, Andy Juris, from the Washington Association of Wheat Growers. He's a fourth-generation wheat farmer, who told us in a recent forum that rising gas, diesel, and natural gas prices are crippling farmers from their equipment to fertilizer. "Instead of working with Republicans to flip the switch on American energy production, lower the costs of food and consumer goods, and help farmers like Andy, the Democrats are again turning to their radical climate agenda. "The two Democrat-only **bill**s today seek **to ban** new plastics manufacturing and certain **single-use plastic products. "These will cost American jobs, worsen the supply chain cris**is, and hurt economic development across the country. **"Importantly, these plastics bans will deprive us of life-saving technologies, like PPE, syringes, vaccine production equipment, medical gowns, and insulated packaging for transporting vaccines.** "These plastics-based products have been critical in responding to the pandemic. **"Plastics are also essential to clean energy and emissions-reducing technologies, like insulation for homes, light-weighting vehicles, wind turbines, and solar panels.** "Innovation has given us so much with these plastic-based technologies that make our lives better. The CLEAN Future Act and the Break Free from Plastics Pollution Act are divorced from reality and will take us back to the dark ages. "We've seen this playbook from the Democrats before, with their campaign for blanket bans on new and innovative chemicals that are essential to manufacturing critical goods. "Whether promoting recycling or discouraging waste, legislation should not be an opportunity to de-industrialize the United States. "These bills also ignore that America has some of the highest environmental standards for manufacturing in the world – we do it cleaner and more efficiently here while also leading the world in reducing emissions." CONSERVING RESOURCES MAKES GOOD SENSE "The other two bills today – H.R. 8059 and H.R. 8183 – address more traditional recycling and composting policy approaches. "Conserving our resources makes good sense, especially if based on innovation and free-market investments in infrastructure. "H.R. 8183, the Recycling Infrastructure and Accessibility Act, from Ranking Member McKinley, prioritizes rural areas for a new EPA pilot program for infrastructure grants. "Rural areas are often short-changed so this rightly focuses on their infrastructure needs to enhance recycling. "I would like to better understand whether a new program and additional dollars are needed here, particularly with the $375 million in taxpayer dollars just funded by the bipartisan infrastructure law for recycling grants. "The other bipartisan bill – H.R. 8059, the Recycling and Composting Accountability Act – seeks more data on recycling and composting in the U.S., and, of concern, increases the federal government's influence in both."

Enforcement (Trade-Off): Links

Plastic bag ban enforcement is resource intensive

Muposhi, et al 2022, 1Department of Marketing Management, Midlands State University, Zimbabwe, Muposhi A, Mpinganjira M, Wait M. Considerations, benefits and unintended consequences of banning plastic shopping bags for environmental sustainability: A systematic literature review. Waste Manag Res. 2022 Mar;40(3):248-261. doi: 10.1177/0734242X211003965. Epub 2021 Apr 20. PMID: 33876669; PMCID: PMC8847762.

The PBB is also criticised for imposing a monitoring and enforcement burden on national governments, often with hefty costs (Stephenson, 2018) **The high cost of ban enforcement and monitoring also makes a ban unsustainable in the long term** (EuroCommerce, 2014; He, 2012)

PBB=Plastic Bag ban

Politics

regulatory approaches

Rena I. **Steinzor,** 19**98,** Associate Professor, University of Maryland School of Law, The Harvard Environmental Law Review, ARTICLE: REINVENTING ENVIRONMENTAL REGULATION: THE DANGEROUS JOURNEY FROM COMMAND TO SELF-CONTROL p. 107-8

This campaign to reform environmental regulations was strengthened by an additional crosscurrent in the body politic: resentment of "big government" in Washington. America's strong traditions of federalism and individual freedom conflicted with the federal government's aggressive intrusions into all aspects of domestic policy. As the federal government increasingly stopped paying for its own policy innovations, the conflict was brought to a head, producing a strong reaction against elaborate federal regulatory programs. **Industries angry about the economic and competitive ramifications of tough environmental rules shrewdly positioned themselves in the wake of a popular movement to return responsibility for domestic problems to state and local governments**.

Industry opposes command and control regulation

Rena I. **Steinzor,** 19**98,** Associate Professor, University of Maryland School of Law, The Harvard Environmental Law Review, ARTICLE: REINVENTING ENVIRONMENTAL REGULATION: THE DANGEROUS JOURNEY FROM COMMAND TO SELF-CONTROL p. 107

Congress' determination to establish a network of detailed regulatory requirements was motivated by a popular backlash against the Reagan Administration's environmental policies, in particular its stewardship of EPA. By the early 1990s, with the ink on the 1990 Clean Air Act Amendments barely dry, a politically powerful backlash had once again emerged, this time spearheaded by the businesses, large and small, that are most directly affected by the new environmental regime. **Picking up on early critiques of traditional rules articulated by the academic community, industry representatives and commentators sympathetic to their point of view increasingly challenged the fundamental premises of command and control as a regulatory strategy**. These groups argued that there were far more efficient and effective ways to accomplish the broad goals that were the foundation of EPA's original mission.

Regulatory Preemption Bad – Politics Link

Political opposition to centralized regulation in the form of preemption

Robert **Kagan,** 19**99**,Professor Political Science and Law and Director of the Center for the Study of Law and Society, University of California, Berkeley, Ecology Law Quarterly, SYMPOSIUM: EVALUATING INSTITUTIONS AND REGULATORY POWER; BUILDING A FRAMEWORK Trying To Have It Both Ways: Local Discretion, Central Control, And Adversarial Legalism In American Environmental Regulation, p. 732

If trying to have it both ways generates problems, **one logical remedy would be to adopt true centralization** - to create a much larger federal bureaucracy, **enforcing preemptive federal law** through local field offices - instead of what Richard Stewart has labeled a "self-contradictory attempt at central planning through litigation." **The political implausibility of that scenario has led some to advocate the opposite: true decentralization**. In such a regime, state and local governments would not be conscripted to enforce federal laws, which they did not make; instead, state and local governments would both make and enforce policies concerning the large number of environmental problems that are basically local in impact. The true decentralization scenario, on the other hand, raises the prospect that revenue problems will compel local governments to make excessive concessions to economic interests. By "excessive," I mean that concessions may be more lenient than even a cost-benefit analysis would suggest, or unfair on distributional grounds, or contrary to their local constituents' true preferences. That concern suggests a modified version of true decentralization in which the federal government's environmental role would emphasize not close policy supervision, but the provision of research, expertise, and financial aid. These could take the form of substantial block grants, and perhaps some programmatic grants, to support state and local environmental analysis, monitoring, enforcement, open space acquisition, construction of water treatment facilities, ecosystem management, and so on. **This scenario**, **too, faces major political obstacles**. Even if it were to come about, the political history of federal block grants is not encouraging. There are always pressures by those dissatisfied with local decisions to lobby for closer federal supervision or preemption, either directly or through the courts. And there are always incentives for Presidents and Members of Congress to seek political credit by passing new laws that narrow local discretion and subject it to tighter legal review. **The most likely scenario, therefore, is a continuing schizophrenic effort to combine local governance with federal legal control - with its inevitable legacy of legal complexity, uncertainty, and adversarial legalism.**

CON – “Alternatives”

Bag Charges

Bag charges have proven effective at reducing use

Dirk Anxos at al, 2017, School for Resource and Environmental Studies, Dalhousie University, Halifax, NS, Canada, International policies to reduce plastic marine pollution from single-use plastics (plastic bags and microbeads): A review, Marine Pollution Bulletin, Marine Pollution Bulletin, Volume 118, Issues 1–2, 15 May 2017, Pages 17-26

This review highlights research gaps (most notably in follow-up effectiveness monitoring) in current policies that aim to reduce single-use plastic consumption. For example, there are few studies examining effectiveness of microbeads bans, likely because there are currently few policies, and those that do exist, have been inconsistently implemented. For example, bans across North America appear to have been implemented inconsistently (Table 1). States, towns and municipalities throughout the U.S. have legislated bans without agreements of neighbouring regions; particularly where different jurisdictions share watersheds or coastlines. Although there is little academic literature assessing effectiveness of introduced interventions for single-use plastics, some studies on the efficacy of bans or levies of single-use plastic bags have been encouraging (Dikgang et al., 2012, Block, 2013). The 2002 levy (€0.15) in Ireland resulted in an immediate reduction (~ 90%) in plastic bag use by an order of magnitude, from an estimated 328 bags to 21 bags per capita; and currently at an estimated 14 bags per capita in 2014. The tax was increased to €0.22 in 2007 and increased again to €0.44 in 2009 because of temporary increases in per capita bag use over the same period. Revenues generated from the bag tax were contributed to an Environment Fund (Earth Policy Institute, 2014). Similarly, in Wales, single-use plastic bag consumption declined by 71% between 2011 and 2014 (when a five pence levy was introduced in October 2011). Statistics released in 2012 by the Welsh Government suggested that carrier bag use in Wales had reduced 96% since the introduction of the levy (Welsh Government, 2014). England was the last country in the UK to adopt the five pence charge for plastic bags, although some retailers participated voluntarily prior to the government policy. Following the introduction of the five pence levy in England, plastic bag use at seven major supermarkets dropped by 85% (Smithers, 2016), which translated to approximately six billion fewer bags issued during the first year of implementation (United Kingdom Department for Environment Food and Rural Affairs, 2015).

Voluntary Approaches

Voluntary approaches solve better

Muposhi, et al 2022, 1Department of Marketing Management, Midlands State University, Zimbabwe, Muposhi A, Mpinganjira M, Wait M. Considerations, benefits and unintended consequences of banning plastic shopping bags for environmental sustainability: A systematic literature review. Waste Manag Res. 2022 Mar;40(3):248-261. doi: 10.1177/0734242X211003965. Epub 2021 Apr 20. PMID: 33876669; PMCID: PMC8847762.

The lack of conclusive data on plastic bag consumption before and after the implementation of a ban was noted in the reviewed articles as the major challenge in assessing the impact of bans. In the absence of such data, policy-makers are unable to evaluate policy effectiveness. To address this challenge, policy-makers could insist on a mandatory disclosure by manufacturers and retailers of such statistics as part of their reporting systems. This can be done by developing a comprehensive plastic bag information system that tracks the production, consumption and disposal metrics. Owing to the limited success of PBBs in several countries, as noted in the reviewed literature, policy-makers could consider moving away from coercive measures such as bans, and instead adopting initiatives that inculcate a sense of responsibility in manufacturers, retailers and consumers in the form of voluntary initiatives. European countries that have achieved impressive results using voluntary initiatives include France, Finland, Germany, France and Austria (Kasidoni et al., 2015). An interesting case is that of Finland, where the voluntary initiatives of retailers were effective in reducing plastic bag litter without needing the support of any national legislation (Larsen and Venkova, 2014).

Recycling Answers

Alternative – more plastic recycling and more environmentally friendly production

Ethan Brown, NPR, November 4, 2022, Plastic Bags Are a Problem. Are Plastic Bag Bans a Solution?, https://www.pbs.org/wnet/peril-and-promise/2023/03/plastic-bags-are-a-problem-are-plastic-bag-bans-a-a-solution/

Another entirely different approach could be making plastic bags more sustainable. That's right, I said it. On the disposal side, single-use plastic bags are currently not recyclable, but that's because the bags are so flimsy they can get caught in the machinery. It's like trying to send paper through a really old copier. You can try, but nine times out of ten, it's going to rip your original in half. Polyethylene, however, is recyclable. If you melt a plastic bag down, you can absolutely recycle that polyethylene, and in fact, recycled high-density polyethylene has about a third of the carbon footprint of virgin high-density polyethylene. Now, obviously, there are still benefits of reducing our consumption of plastic. We talked about a whole list of issues in our first segment, and those don't vanish. But that's not to **say plastic bag recycling couldn't be more widely implemented**. I personally don't care much what kind of bag my groceries are in, I'd even take a Hello Kitty bag if it meant my eggs got home without breaking, but I'm sure some people really love their plastic bags, and for those that do, this is certainly an intriguing possibility. **Plastic bags could also be more sustainable from the production side. Remember when I said petrochemical facilities use natural gas for electricity? What if they used solar or wind? I know it sounds silly, but it would make a difference. In fact, we can take it a step further. What if instead of making the plastic from fossil fuels, we made it out of plants? That's one idea that I've seen floated all over the internet. Or, another idea, what if plastic could be made directly from carbon dioxide that we suck from the atmosphere? Scientists are working on that**, and according to a 2021 thesis study from LUT University in Finland, if that process were powered by clean energy, plastic bags made from carbon dioxide could actually be carbon negative. In other words, rather than emitting carbon, they would take carbon out of the atmosphere. Now, I'm not sure how far along plant plastic or CO2 plastic are in the development process, but certainly very exciting possibilities if they could scale up.

Any contamination of the recycling means the whole bin goes to the landfill,

John Hite, April 14, 2019, Conservation Law Foundation, We Can't Recycle Our Way Out of the Plastic Pollution Problem, https://www.clf.org/blog/cant-recycle-out-of-plastic-pollution-problem-guide/#gsc.tab=0

As we build a better system for our waste, follow this handy guide for what can and can't be put in the recycling bin. Single stream recycling systems, which are common across New England, collect all recyclable items together. Plastics are sorted along with more recyclable items like glass jars, metal cans, and paper goods. But not all types of plastic are recyclable. And if recyclable plastic gets contaminated with non-recyclable plastic, it sends the whole bale straight to the landfill. In this broken system, big waste management companies that provide recycling (like Waste Management and Casella) blame you for not recycling carefully enough. They say it's your fault for contaminating a bin, for being a bad recycler. Instead of focusing on improving recycling within the current system, we need a new system that creates a structure for using less plastic from the beginning.

States/Localities

States can ban

Wang et al, 2022, Qingbin Wang, Department of Community Community Development and Applied Economics, University of Vermont, Qingbin Wang is a professor and Angela Tweedy is a graduate research associate at the University of Vermont, and Helen Wang is a research assistant at Smith College, Reducing plastic waste through legislative interventions in the United States: Development, obstacles, potentials, and challenges, Sustainable Horizons, March 2022, Reducing plastic waste through legislative interventions in the United States: Development, obstacles, potentials, and challenges,
https://www.sciencedirect.com/science/article/pii/S2772737822000086

The distribution of more than 100 billion plastic bags every year in the United States has caused many environmental problems and an increasing number of local and state governments have enacted ordinances and legislations to ban or tax single-use plastic bags and other plastic products. By February 2022, a total of 11 states had enacted statewide plastic bag bans and several other states have proposed similar legislative bills.

Many states have enacted plastic bag bans

Wang et al, 2022, Qingbin Wang, Department of Community Community Development and Applied Economics, University of Vermont, Qingbin Wang is a professor and Angela Tweedy is a graduate research associate at the University of Vermont, and Helen Wang is a research assistant at Smith College, Reducing plastic waste through legislative interventions in the United States: Development, obstacles, potentials, and challenges, Sustainable Horizons, March 2022, Reducing plastic waste through legislative interventions in the United States: Development, obstacles, potentials, and challenges,
https://www.sciencedirect.com/science/article/pii/S2772737822000086

However, an increasing number of local and state governments have enacted ordinances and legislations to ban or tax the use of plastic bags and other plastic products in the past two decades, particularly in the past several years (Wagner, 2017; Kish, 2018). In 2007, San Francisco became the first large city in the United States to ban single-use plastic bags (Romer, 2010). Washington, D.C. soon followed suit in 2009 by enacting legislation that required consumers to pay a fee of $0.05 per disposable plastic or paper bag used at checkout (Xanthos and Walker, 2017). By the end of February 2022, 11 states and more than 300 municipal governments in the United States had enacted alternative plastic legislations and ordinances to ban or tax the use of plastic bags and other plastic products.