Costs of Single-use Plastics Pollution in Florida

Preemption of single-use plastics regulation is hurting Florida
To compete for tourist dollars with coastal states and Caribbean island nations that have prohibited use of single-use plastics, Florida Legislature must allow Florida's local governments to create similar regulation of the single-use plastics that make up most of the litter on Florida's beaches and waterways.

Plastics pollution is a drag on Florida's economy
Tourism provides Florida with $112 billion annually and supports one in six jobs[1]. Plastics pollution is already costing Florida significant income. A NOAA study of tourist attitudes shows that tourism would be 8.1% higher (an extra ~$7 billion/year in Florida), if plastic trash were eliminated from waterways and beaches, and 16-26% lower (a loss of ~$27 billion/year in Florida) if plastic trash were to double[2].

Two thirds of the world's nations already have legislation to restrict single-use plastics. Beach vacation destinations that compete with Florida, such as Jamaica and Bahamas, as well as beach communities in Texas, South Carolina, and California, have recently banned single-use plastics. Our direct competitors have found this strategy effective in protecting their tourist economies and attracting high-value visitors.

The single-use plastics problem compounds. Visitors use a disproportionate quantity of single-use plastics and generate twice as much plastics pollution as residents[3]. Increasing tourism increases pollution in a negative feedback loop that discourages visitors and holds Florida's economy below its potential.

Harms from microplastics
Plastic trash in the water breaks down into microplastics that work their way up the food chain[4] posing a significant health hazard to humans and the environment. Most concerning, microplastics were recently detected in human placenta[5]. This finding raises the disturbing likelihood that microplastics are inflicting the same harm on human fetuses as seen in other creatures. In marine organisms where microplastics have been studied most extensively, microplastics stunt growth[6], reduce energy reserves[7], and disrupt normal endocrine function[8].

Recycling doesn't solve the problem
Recycling does not and cannot prevent plastics pollution because recycling is inefficient at best and fails to capture the litter stream that produces the greatest harm. Currently only 7% of plastic bottles are recycled in Florida[9]. Studies show that only 10% of all plastics can be recycled economically[10] and the international market for recyclable plastics has dried up[11]. Even minimally effective recycling and cleanup programs are increasingly expensive. Burning plastics to generate electricity makes as much pollution as coal burning.

Allow local regulation of single-use plastics
Florida's legislative preemption prevents communities from enacting laws that control single-use plastic, hampering the state's ability to compete for domestic and international tourist dollars. The ban must be repealed to allow Florida to compete for domestic and international tourists, and to protect the health of unborn children and the ecosystem we depend on.

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Plastics Impact on Florida's Tourism and Economy

Taina Adam

Summary

Florida's tourism and economy is dependent on the health of our coastal ecosystems. Studies show that the continuation of consuming single use plastics can damage Florida's environment and economy. We estimate the cost of plastic beach trash in tourism dollars alone at $7 billion / year.

Florida's blue economy and tourism

- Florida ranks #2 as the most visited state in the United States.[1]
- 130 million tourists visited Florida in 2019, a 7% increase from 2018. [2]
- Most tourists visit Florida to enjoy the ocean beaches and parks.
- The state's tourism industry generated $111.7 billion of expenditures in 2018 and more than 1.4 million jobs. [2]
- Out-of-state tourists spent $112 billion in 2016, supporting one out of every six jobs, making tourism Florida's largest employer and consistently adding jobs faster than the rest of the state's economy. [2]
- International beach tourists alone spend $12.4 billion annually in Florida. Moreover, tourists generated $11.6 billion in local and state taxes to help fund Florida's government and services. The state's beach tourism generates $6.4 billion in federal taxes.[2]

Single Use Plastics Products (SUPPs) in travel & tourism

- Tourists typically generate up to twice as much solid waste per capita as local residents.[3]
- The Tourism & Food service industries have been identified as major contributors to plastic waste. The increase in food and beverage outlets serving both visitors and the local community resulted in the proliferation of plastic litter.[4]
- The five most frequently polluting SUPPs are water bottles, disposable toiletries, plastic bags and bin liners, food packaging, and cups.[4]

Economic impacts of plastic marine debris on other American beach communities

- Florida has failed to gather data, so we relied on data from other beach communities.
- The cost to local governments to clean beaches along 90 towns in Washington, Oregon, and California was estimated at more than $500 million in a 2012 study.[5]
- Changes in recreation visits to beaches, as a result of an increase or decrease in beach debris, has cascading economic impacts on the regional economy.[6]
- To understand the relationship between debris and beach visits, a federal study by NOAA recruited participants at beaches and asked about how marine debris influenced their beach visitation.[6]
- The potential economic losses from an increase in marine debris were greatest in Orange County, California, where doubling debris on beaches resulted in an estimated loss of $414 million tourism dollars spent in communities, and a decrease of nearly 4,300 jobs.[6]
- Conversely, eliminating Marine Debris in Orange County, California would result in the Increase of 2.1 million visitor days, increase of $130 million in recreational value, increase of $187 million in tourism spending, and an increase of 1,900 jobs.[6]

Estimated effect on Florida's economy from marine debris

We estimate the current cost of plastic beach debris to Florida's tourism at $7 billion per year.

Estimated benefit to Florida's economy of eliminating beach trash
Researchers estimated that Alabama would receive an 8.1% increase if they reduced their beach debris to zero. Extrapolating to Florida:

- In 2014,Florida tourists spent on average $155/day. [7]
- 91.8% of visitors 102 million tourists participated in outdoor recreation an average 6 days during their Florida visits. [8]
- 102 million x 0.918 = 93,840,000 beach visitors.
- 93,840,000 beach visitors x 6 days = 563,040,000 visitor beach days.
- 563,040,000 visitor beach days x 0.081 = 45,606,240 visitor beach days.
- $155 x 45,606,240 visitor beach days = $7 billion increase to Florida economy if we eliminate all plastic beach trash. That figure is our best estimate of the 2014 cost to Florida's economy from plastic trash on our beaches. Note that tourism increased 10% in the five years from 2014 to 2019. [9]

Estimated cost to Florida's economy of doubling beach trash
Researchers estimated that Alabama would lose -26.5% if their beach debris doubled. Extrapolating to Florida:

- 563,040,000 visitor beach days x 0.265 = 149,205,600 visitor beach days.
- $155 per day x 149,205,600 days = $23 billion loss to Florida's economy if beach trash doubled.

Detailed calculations of marine debris Estimated effect on Alabama's economy. [6]
Estimated recreation days at Alabama beaches is 4.55 million.

Researchers estimated that Alabama would receive an 8.1% increase if they eliminated beach trash.

- Based on the survey, if trash on those beaches were reduced to almost none, recreation days in Alabama would increase by 8.1%, for an estimated increase of approximately 369,000 recreation days (4,550,000 days x 0.081 = 369,000 days).
- Based on the nationwide recreation model, recreators value each day of recreation at Alabama beaches at $27.27.
- Thus, if a reduction in debris to almost none results in an additional 369,000 days of recreation, Alabama's recreation would bring in an $10.1 million annually. ($27.27 per day x 369,000 days = 10.1 million).

Researchers estimated that Alabama would lose -26.5% if their beach trash doubled.

- Based on the survey, if beach trash at those beaches were doubled, recreation days in Alabama would decrease up to 26.5%, for an estimated decrease of approximately 1,205,750 recreation days (4,550,000 days x 0.265 = 1,205,750 days).
- Based on the nationwide recreation model, recreators value each day of recreation at Alabama beaches at $27.27.
- Thus, if the beach trash doubles, it results in a deduction of 1,205,750 days of recreation. Alabama's recreation would lose $32.9 million annually. ($27.27 per day x 1,205,750 = $32,880,802.5).

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Amount and Proportions of Plastics Recycled in the State of Florida

Amanda Di Perna

Summary:
The State of Florida produces more plastic waste than the current recycling system can process. As the amount of plastic has increased, Florida's recycling rate has gone down, despite increasing initiatives to improve recycling.

Florida recycles only 8% of total plastic waste[1]

- Florida generates 65.1 pounds of plastic trash per capita per year, making it the third highest generator of plastic waste in the nation.[1]
- Despite being one of the top generators of plastic waste, Florida's plastic recycling rate ranks 34 of 50. Florida only recycles an estimated 5.0 lbs/capita of plastic annually.[1]
- In 2020, only about 7% of plastic bottles were recycled.[2]

Florida cannot approach the state's 75% recycling goal without fudging the numbers

- In 2008, the Florida Legislature established a statewide weight-based goal 75% recycling of waste by 2020. Two years later, Senator Lee Constantine sponsored a law that expanded the state's recycling goal to 75% of all garbage.[4]
- The recycling rate of the state of Florida has been declining since 2016.[5]
- As of December 2019, an estimated 49% of waste was recycled, indicating that the 75% recycling goal has not been met.[5] Plastic makes up a minute component of recycled waste.
- Florida's reported 49% recycling rate is artificially inflated by inclusion of disposal methods that are not recycling:
    - garbage that is incinerated to generate energy.[4]
    - yard waste dumped in a land fill that has a system for capturing methane from decomposition.[4]

  If only traditional materials were considered, such as cardboard boxes, paper, plastic water bottles, cans, and glass jars, Florida's recycling would appear much grimmer.[4.]

Plastic is difficult to recycle anywhere in the United States

- 75.5% of plastic generated in the United States is landfilled, six times more than the amount of plastic that is recycled.[8]
    - Once plastic enters these landfills, it does not disappear as most plastics are not biodegradable.[9]
- PET #1 and HDPE #2 plastic bottles are the only types of plastic that are truly recyclable in the United States.
    - Many full body shrink sleeves on these products make them non-recyclable.
- Single-use plastic food service and convenient products cannot be claimed as recyclable in the United States.

Existing programs to increase plastic recycling in Florida don't help much

- Single Stream Recycling (SSR) Program:
    - More than twenty counties have switched their recycling program from dual stream recycling (DSR) to SSR.[7]
    - SSR increases efficiency of the collection process, however, leads to cross contamination before reaching material recovery facilities.[7]

        - 30% of materials collected at curbside and sent to Florida recycling facilities cannot be recycled, plastic bags and film are major contributors to this percentage.[6]
        - Cross contamination increases recycling costs and reduces the amount of recyclable material. Eliminating the 30% of contaminated materials in curbside recycling bins would save $100 million in recycling costs in one year.[6]
    - W.R.A.P. (Wrap Recycling Action Program)
        - Nationwide initiative promoting retail takeback of plastic film.[6]
        - Pilot campaign launched in January 2019 in nine Florida counties: Alachua, Duval, Escambia, Indian River, Leon, Miami-Dade, Orange, Palm Beach, and Seminole.[6]
        - This program increases plastic recycling just a little by adding one item to the few plastic materials that can be recycled in Florida.

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Waste Management and Recycling Financial Data

Darleng Egea

Summary:
Local governments in Florida spend hundreds of millions of dollars annually on ineffective recycling programs. These programs recycle little plastic into useable material, but instead burn much of the plastic, polluting the air with dioxin and greenhouse gasses. Burning plastics to generate electricity produces greenhouse gasses equivalent to coal-powered generation in quantity and cleanliness. Initiatives to increase waste-to-energy production harm the health and welfare of Floridians and are thus misguided.

Given the weak demand for recycled plastics and lack of effective plastic recycling facilities, the economy and public health are better served by reducing sale and distribution of single-use plastics rather than wasting money and effort on plastics recycling or waste-to-energy programs. [1]

Federal Assistance:
Federal grant programs exist to aid local governments in reducing plastic waste and plastics pollution in state waters. These grants can cover costs of programs that decrease environmental pollution.

Bipartisan Save Our Seas 2.0 Act of 2020
The Act provides up to $55 million per year for fiscal years 2021-2025 for grants to states to implement post-consumer materials management programs and research programs designed to reduce pollution by consumer plastics and microplastics in our marine waters. By January of 2023, EPA must provide a report to Congress describing, *"how much plastic waste was prevented from entering the oceans and other waterways" due to the grants program."* [2] Additional grant funds are provided by the Trash Free Waters Grant program.

Recycling Recognition Program:
"The Recycling Recognition Program was created by DEP to encourage private businesses, institutions, schools, public organizations and citizens to increase recycling. DEP monitors and recognizes outstanding recycling efforts around the state. Since its inception in 2012, the Recycling Recognition Program has presented over 45 awards to a variety of large and small businesses, public organizations and individuals."[4]

Recommendation:
Reduce plastics pollution and improve public health in local waste management operations by introducing legislation to reduce generation of plastic waste and educating citizens and local businesses on alternatives to single-use plastics.

How Miami-Dade County spent on waste management in 2020:

Resource recovery & incineration for energy $45.7 million
Covanta Dade Renewable Energy, manages the Resources Recovery Facility in Miami-Dade County and processes recyclable trash and non-recyclable waste.
Miami-Dade County has opted not to renew the contract because of air pollution from burning plastic.

Waste collection & processing $13.7 million
Waste Management Inc. of Florida delivers waste to Waste Management Landfill of Medley, Florida. Processes County waste and delivers 100,000 tons to County facilities.[3]

Progressive Waste Solutions of Florida Inc. & DBA Waste Connections
Delivers 51% of county waste with a fee of $21.34 per ton.

"The annual fee for curbside collection increased from $464 in fiscal year 2019 to $484 per household in fiscal year 2020. The increase was made effective via a non-ad valorem assessment of $20 approved by the Board of County Commissioners with the purpose of maintaining the current level of services."

Curbside collection and hauling of recyclable items $9.4 million
Progressive Waste Solutions of Florida Inc. & DBA Waste Connections & World Waste Recycling Inc.

Litter Control $1.2 million

Remediation of County Landfill Pollution $77.2 million

Recycling $9.6 million

Total costs $254.2 million

What the Florida DEP[4] is saying about recycled plastics:

> *"According to Waste Management, Inc., two years ago, the average price for mixed recovered materials that were commonly collected was $140.00/ton. The average price of mixed recyclables for Quarter 1 of 2019 was $56.90/ton; resulting in a 70% decrease in the value of mixed recovered materials."*

Unfortunately, this statement means that recycled plastic has nowhere to go and costs local governments more money to process. The response has been to burn more "recycled" plastic waste.[4]

> *"The tipping fees for disposal at landfills are much lower than the cost to recycle and many municipalities are left with the decision of whether to continue curbside recycling at a much higher cost or dispose of this material at a lower cost. Consequently, many programs have decided to drop material types, i.e., glass, from their recycling programs or drop their curbside programs altogether."*

This statement reflects the reality that Florida's local governments are unable to manage the plastic accumulating in their sectors. Local restrictions on single-use plastics could limit the costs of plastics disposal by local governments, but these solutions are currently preempted by the State.[4]

What the Florida DEP[4] proposes:

- "Tax incentives for usage of recycled materials as feed stocks in manufacturing processes.
- Tax incentives and credits to support materials recovery plant upgrades.
- Public/Private partnerships to invest in new processing technologies.
- Investments in expansion of Recycling Business Assistance Center activities.
- End-user purchase rebate for Florida Certified Compost."

These recommendations seem beneficial overall, but we see no reason to believe they could significantly increase effective recycling of single-use plastics.

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Failure of International Recycling Markets to Address Plastic Waste Problem

Michael Perez & Nayla Alcocer

Summary: Plastic recycling efforts in the United States have virtually stalled for lack of domestic or international market for plastic waste. At this time, steps to reduce plastic consumption are the only solutions available in Florida for addressing our plastic waste problems.

Recycling has been promoted as the ethical solution for plastics waste. Since only 9% of municipal plastic waste can be recycled domestically, international markets sustained municipal recycling programs.

Asian countries found they could not process our plastic either, and started refusing plastic trash from outside their borders. In 2020 China closed its borders to plastic waste from other countries. The United States responded by redirecting its plastic trash to less industrialized nations in Southeast Asia. In 2018, even before China's move, the United States exported 157,000 shipping containers containing half a million tons of plastic waste to Southeast Asian countries.

Like China, however, these nations were unprepared to process the flood of international plastic waste. For instance, Vietnam's Institute of Strategy and Policy on Natural Resources and Environment stated that only 8-12% of the plastic waste received could be processed in actual recycling plants. Vietnam announced that by 2025 it will ban all plastic waste imports due to the difficulties related to recycling plastic. Thailand and Malaysia are doing the same. Malaysia's environmental minister commented on the global recycling industry:

> "*Garbage is traded under the pretext of recycling, Malaysians are forced to suffer poor air quality due to open burning of plastics which leads to health hazard, polluted rivers, illegal landfills and a host of other related problems."*

Lacking sufficient domestic or international markets for plastic waste, over 90% of plastic collected for recycling gets burned or put into a landfill. Plastics recycling is a noble goal, but it has largely failed to solve the plastic waste problem.

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How Countries Around the World are Successfully Transitioning Away from Single-use Plastics

Olivia Guthrie

Summary

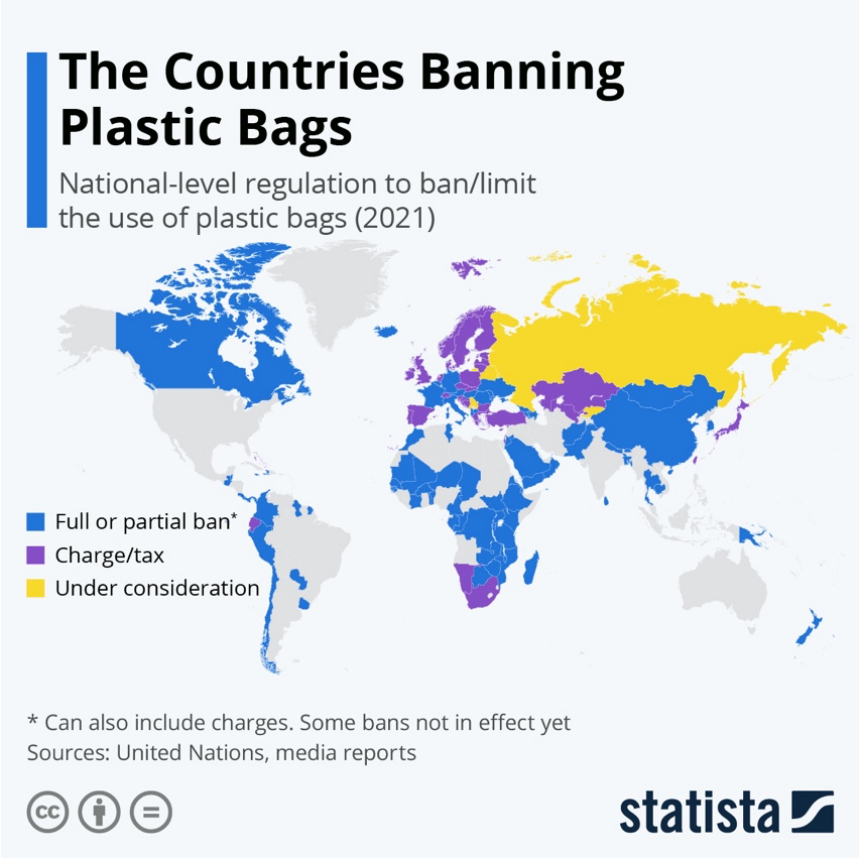
Florida's biggest rivals for beach tourism, Bahamas, Jamaica, California, and Hawaii, have enacted strict legislation to restrict distribution of single-use plastic bags and food containers. In fact, two thirds of the world's nations have enacted or are developing legislation to restrict single-use plastics. Our Caribbean neighbors, the Bahamas and Jamaica, as well as domestic tourism rivals Hawaii and California, are set to realize an economic boost to tourism from these restrictions, providing Florida with tested models for how we can protect and boost our vital tourism economy.

Single-use plastics bans within the U.S.

- Within the U.S. cities, counties, and states are implementing their own limitations on plastic usage. A 2018 survey found 347 political entities coast to coast have implemented plastics restrictions, including those in politically conservative, business-friendly coastal states that compete with Florida, such as Texas, Alabama, and South Carolina. [i]
- Florida's biggest domestic competitor for beach tourism is California. Since 2016, California has banned the distribution of single-use plastic bags. Consumers bring their own reusable bags to the store or are charged a fee to receive a paper bag.[2]
- Hawaii, another tropical tourism competitor for Florida, has a de-facto ban on all non-biodegradable plastic bags and paper bags with less than 40% recycled materials. New York, Connecticut, Delaware, Maine, Oregon, and Vermont also have implemented statewide bans on single-use plastics.[3]

Most nations are implementing single-use plastics bans

- The UN reported that two thirds of nations around the world (127 of the 192 countries reviewed) are implementing bans on single-use plastic bags.[4] This legislation includes restrictions on the manufacture, distribution, use, and trade of plastic bags, as well as taxation and levies. These countries vary in levels of income and development, but all realize the importance of finding alternatives to single-use plastics and eliminating or restricting plastics consumption.
- Within the Caribbean, the Caribbean Ministries has declared waste management to be a major issue, in particular the disposal of plastics. Twelve Caribbean nations have introduced measures to reduce plastic pollution to improve economic growth. These countries all compete with South Florida for beach tourism, including the two biggest vacation spots, the Bahamas and Jamaica.



- To reverse the economic harm being caused by coastal plastics pollution, the Bahamas enacted a ban on all single-use plastic bags and foodware.[5] Legislation was signed in 2019, began in January 2020 and came into full effect July 1st, 2020. Starting January 1st, importation of single-use plastic bags became illegal, but vendors were still allowed to distribute any of the bags in their inventory as of June 30th. At the same time, a fee became associated with receipt of a plastic bag, ranging from 25 cents to a dollar. For the two years prior to the ban, the government had been giving out reusable bags, so all items banned had readily available alternatives.[6]
- Many of the countries in the Caribbean are impoverished, going to show money from the transition to a non-plastic country does not have to be hindering. The investment within the country's future is well worth it as tourism and fishing numbers go up.
- Outside of the Caribbean, countries from the UK to Kenya (the country with the strictest plastic ban and large fines attached to their use) many countries are recognizing the wisdom of eliminating single-use plastics.[7]
- As of July 2nd, 2021, the EU has put a directive ban on all single-use plastics for which an alternative exists. For products that don't easily have an alternative (such as bottled drinks) each country has to create regulations measuring and reducing consumption of such goods. The directive also serves out "producer responsibility" making all producers cover the costs of "waste management clean up, data gathering, and awareness-raising for certain products". The EU consists of 27 countries, a large mass of Europe, making this new legislation far-reaching. The general goals are to be achieved at different year intervals for all EU members.[8]

Jamaica: case study in eliminating single-use plastics

- Prior to the ban, Jamaica had one of the highest per capita consumptions of single-use plastic bags in the world, 500 bags per year per person.[9] Fifteen percent of residential waste was estimated to be plastics (120,000 tons/year).[10] About 75% of this plastic was disposed of in waste sites, with the rest ending up in drains, rivers, gullies, beaches, and ultimately the ocean. With the two major industries in Jamaica being tourism and fisheries, plastic waste was damaging the marine environment as well as diminishing its appeal to international visitors. The top ten items collected from beaches and coastal areas on a national cleanup day were single-use plastics or styrofoam waste.[11]
- Jamaica's ban on single-use plastic bags began on January 1st, 2019, in a series of six phases, the final phase implemented January 1st, 2021.
- The ban covers the manufacture, importation, and distribution of plastic bags. Garbage bags as well as plastic bags from primary food packaging (such as the bag a loaf of bread might come in) are still allowed.
- This change was made possible by many factors, knowledge of which can help Florida's efforts to clean our marine environment and remain competitive for tourism. These include the hard push by Senator Matthew Samuda, and full backing of the Prime Minister. Both sides of parliament saw the benefits, so no political fighting erupted over the issue. A single-use plastics ban was publicly backed by major business and environmental groups in Jamaica. The Hotel and Tourism Association spoke out in support. Sandals, a major hotel and resort chain, extended this policy to all their hotels in the Caribbean.
- Jamaica has emphasized that public support is instrumental, fostered by educating the public on the importance of reducing plastic use and waste.

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