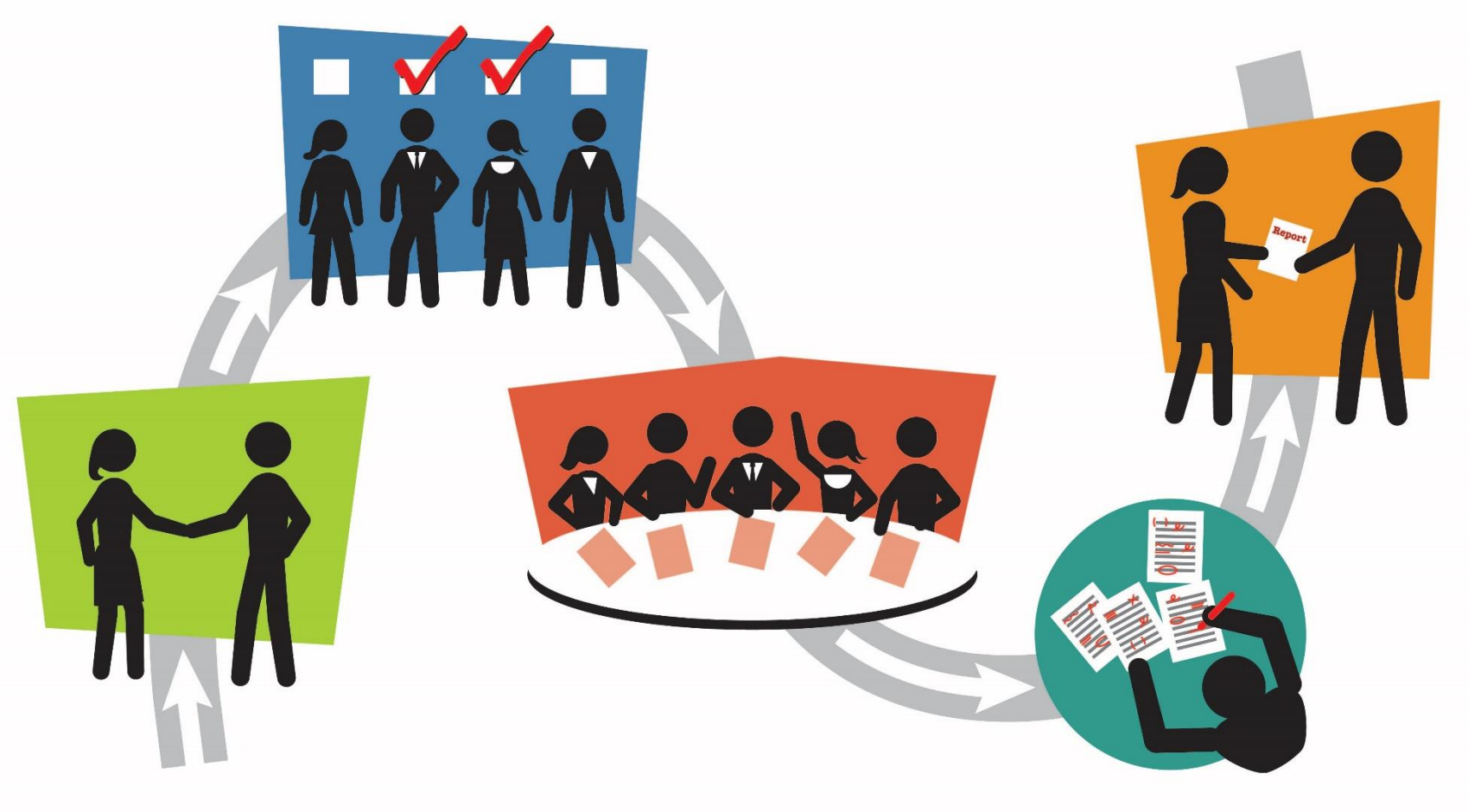
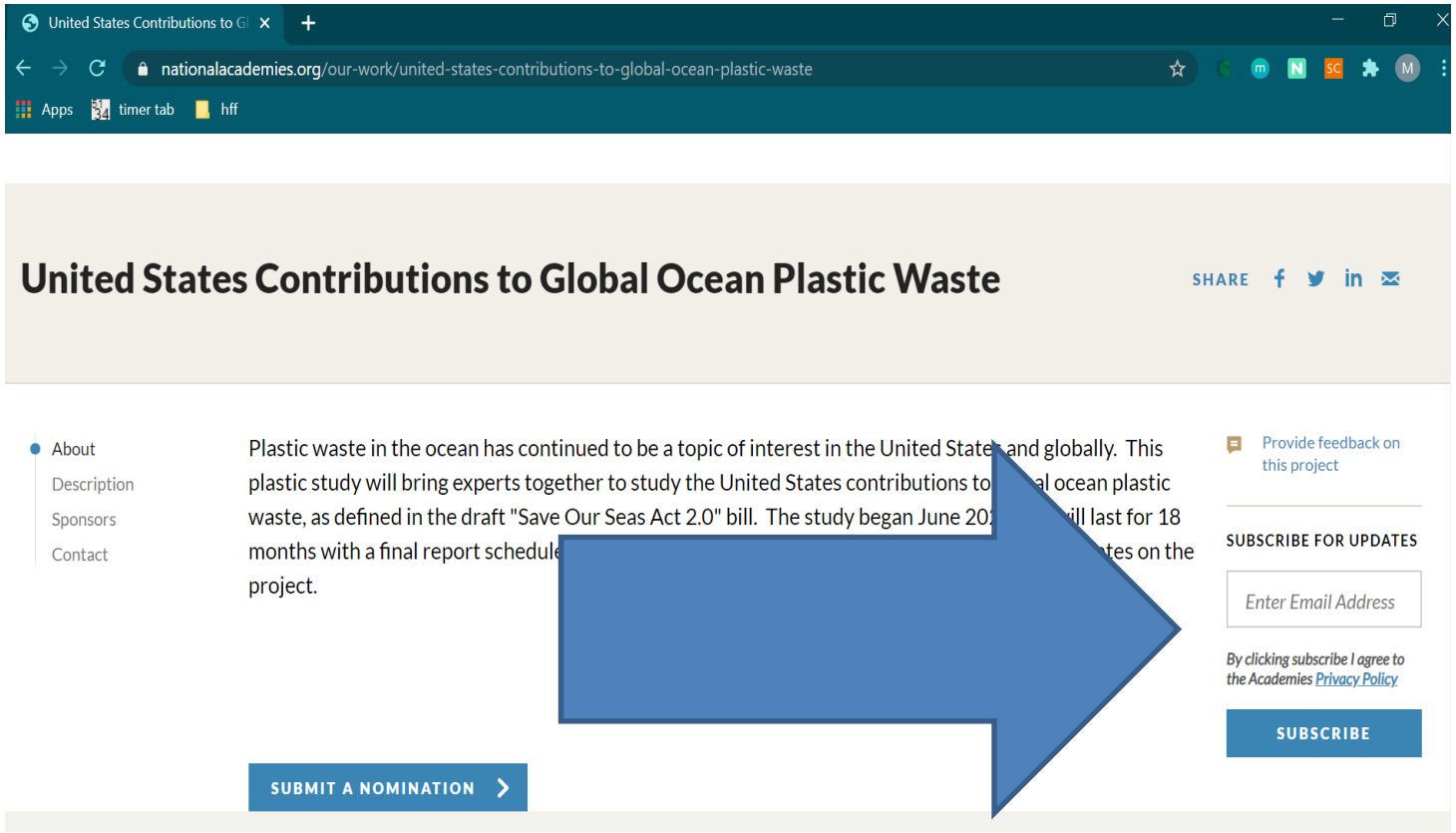

United States Contributions to Global Ocean Plastic Waste: Meeting 1
The National Academies of
SCIENCES · ENGINEERING · MEDICINE

WELCOME

The Consensus Study Process



Information and Updates



Committee Membership

• Margaret Spring (Chair)	Monterey Bay Aquarium
• Mary Donohue	University of Hawai'i
• Michelle Gierach	NASA Jet Propulsion Laboratory
• Jenna Jambeck	University of Georgia
• Hauke Kite- Powell	Woods Hole Oceanographic Institution
• Kara Lavender Law	Sea Education Association
• Jay Lund	University of California, Davis
• Eben Schwartz	California Coastal Commission
• Rashid Sumaila	University of British Columbia

Today's Objectives

- Clearly understand the needs, perspectives, and expectations of the study sponsors
- Explore the committee's task with other relevant stakeholders
- Identify information needs

Agenda

11:00 Welcome and overview

11:10 Study origins and expectations

12:00 Save Our Sea 2.0 Conversations

12:30 Break

1:10 Stakeholder Panel

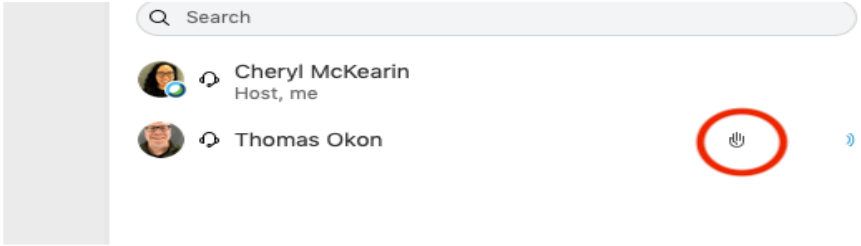
2:30 Adjourn

Ground Rules

- Please keep your line muted and video off unless you are speaking
- Committee members - Please raise your virtual hand if you want to comment or ask a question.

To use the feature:

1. Find your name on the participant list, and hover over your name. A Raise Hand icon will appear.
2. Click on the Raise Hand button which will place a small hand icon next to your name in the participant list.



3. Click on the Lower Hand button to withdraw the request.

Ground Rules

- Those tuning in to the webinar, you may submit questions or comments through the Q&A box.

Committee on U.S. Contributions to Global Ocean Plastic Waste

First Open Session

October 28, 2020

Amy V. Uhrin

Chief Scientist, NOAA Marine Debris Program

Albert Einstein Memorial
National Academy of Sciences Building, Washington DC

NOAA Marine Debris Program Authorizations

2006

Marine Debris Research, Prevention, and Reduction Act

2012

Marine Debris Act (amended)

2018

Save Our Seas Act (amended & reauthorized)

2019

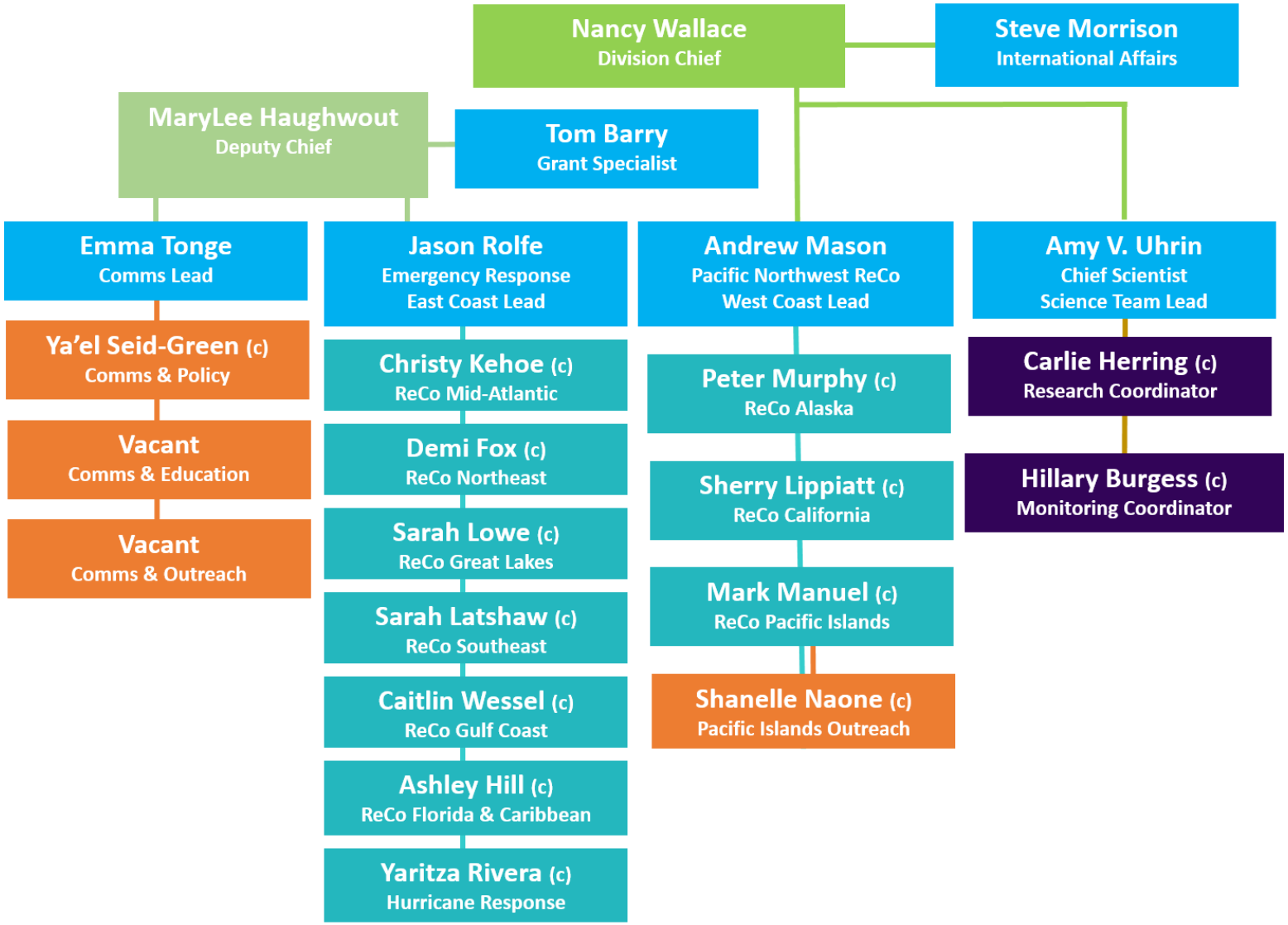
Save Our Seas Act 2.0 (introduced June 2019)

NOAA Marine Debris Program
Mandated Activities

- undertake national and regional coordination
- lead & coordinate Interagency Marine Debris Coordinating Committee
- maintain Marine Debris Clearinghouse
- reduce adverse impacts of derelict fishing gear
- conduct community outreach & education incl. w/ other Fed agencies
- respond to severe marine debris events
- promote international action
- provide grants for marine debris projects to identify, determine sources, assess, prevent, reduce, remove marine debris

NOAA Marine Debris Program Staff

NOAA Marine Debris Program Organization



U.S. Contributions to Global Ocean Plastic Waste

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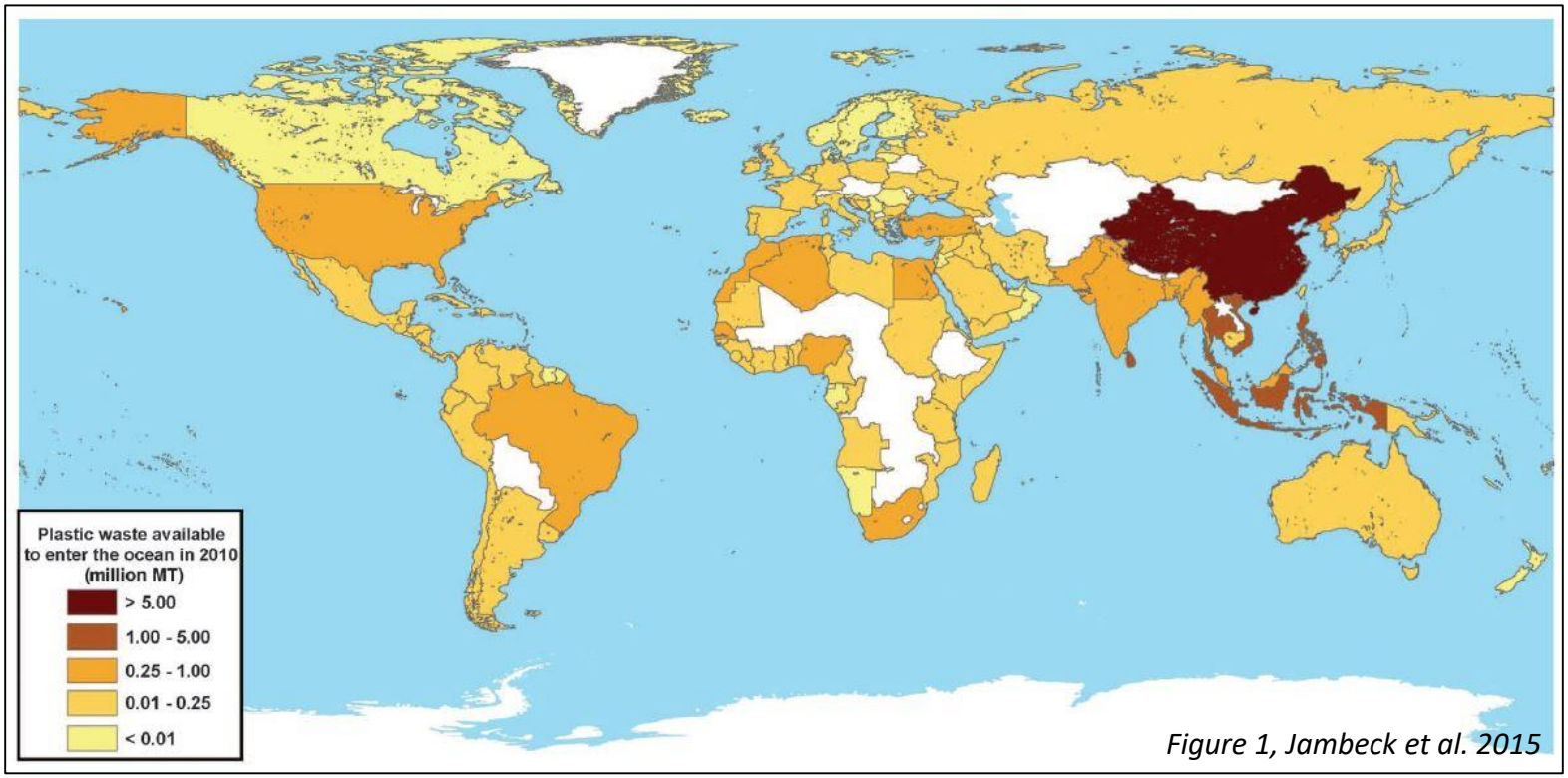

Figure 1, Jambeck et al. 2015

United States

20th out of 192 countries

0.28 million metric tons generated in 2010

higher rate of waste per person

U.S. Contributions to Global Ocean Plastic Waste

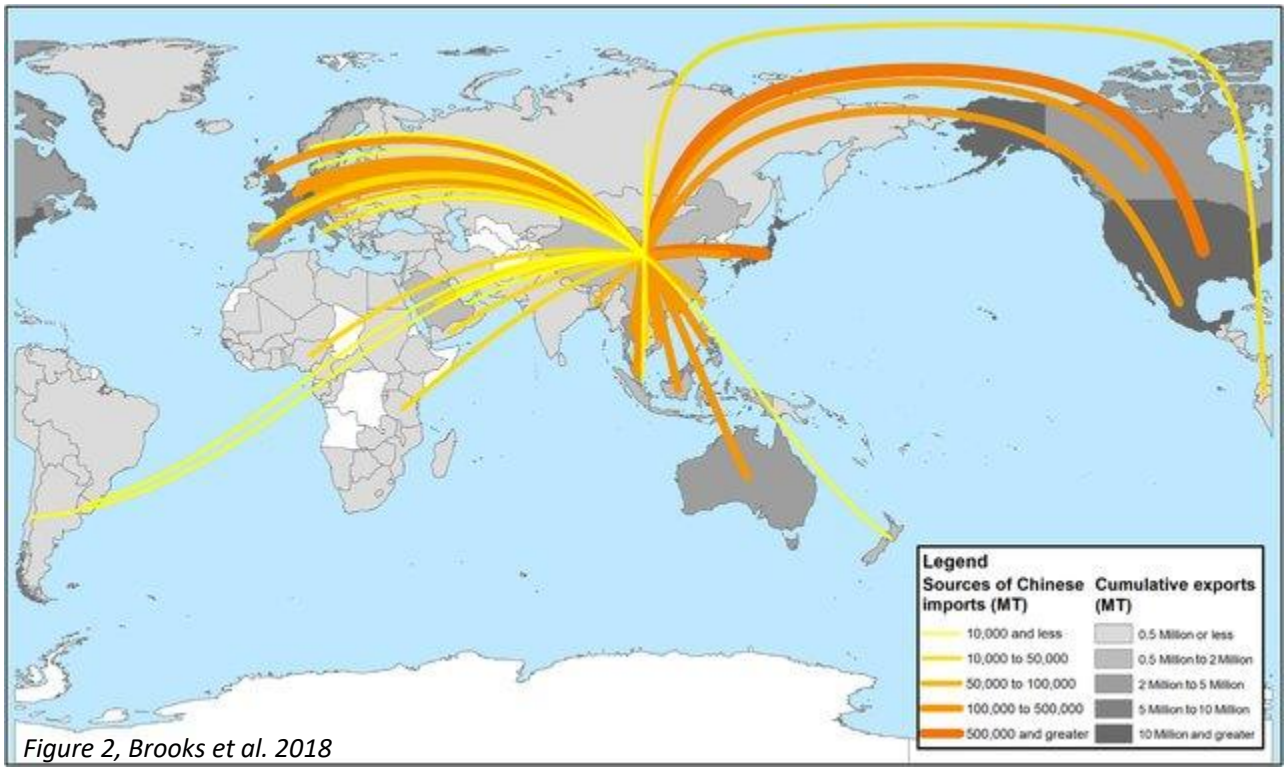

Figure 2, Brooks et al. 2018

United States

26.7 million metric tons exported 1988-2016

12.4% of global exports

U.S. Contributions to Global Ocean Plastic Waste

U.S. Contributions to Global Ocean Plastic Waste

- Born out of the draft Save Our Seas Act 2.0 bill which reads,

SEC. 133. STUDY ON UNITED STATES PLASTIC POLLUTION DATA.

(a) IN GENERAL.—The Under Secretary, in consultation with the EPA Administrator and the Secretary of the Interior, shall seek to enter into an arrangement with the National Academies of Sciences, Engineering and Medicine under which the National Academies will undertake a multifaceted study that includes the following:

U.S. Contributions to Global Ocean Plastic Waste

(1) An evaluation of US contributions to global ocean plastic waste, including types, sources and geographic variations

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- compare to global estimates of plastic waste entering the ocean
- assess US contribution by mass and percentage of total
- evaluate US contribution according to size class

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U.S. Contributions to Global Ocean Plastic Waste

Table 2.2 Size categories of plastic marine litter, assuming a near-spherical form, showing common definitions and alternative options that may be appropriate for operational reasons.

Field descriptor	Relative size	Common size divisions	Measurement units	References	Alternative options	Remarks
Mega	Very large	> 1 m	Metres	GESAMP		
Macro	Large	25 – 1000 mm	Metres Centimetres Millimetres	MSFD	25 – 50 mm	
Meso	Medium	5 – 25 mm	Centimetres Millimetres	MSFD	< 25 mm 1 – 25 mm	MARPOL Annex V (pre revision)
Micro	Small	< 5 mm	Millimetres Microns	NOWPAP MSFD	1 – 5 mm < 1 mm > 330 µm*	Eriksen *et al.* (2014)
Nano§	Extremely small	< 1 µm	Nanometres		< 100 nm	Not considered for monitoring

*operationally-defined, referring to the typical mesh size of 330 µm of towed plankton nets; §nano-sized particles can only be identified under carefully controlled laboratory conditions and may form a monolayer on one (plates) or two (fibres) dimensions

GESAMP Working Group 40
2019 Guidelines for the Monitoring and Assessment of Plastic Litter in the Ocean.

U.S. Contributions to Global Ocean Plastic Waste

(2) An assessment of the prevalence of marine debris and mismanaged plastic waste in saltwater and freshwater US navigable waterways and tributaries

U.S. Contributions to Global Ocean Plastic Waste

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- include contributions from land-based industry, littering, mismanaged waste, wastewater treatment plant discharge, river discharge, accidental transportation-related releases, or other significant sources
- evaluate how much and what proportion of upstream waste flows downstream to the ocean
- include state of knowledge about distribution and fate of different types of plastic within the water column, nearshore and offshore

U.S. Contributions to Global Ocean Plastic Waste

(3) An examination of the import and export of plastic waste to and from the US, including the destinations of the exported plastic and the waste management infrastructure and environmental conditions of these locations

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- estimate U.S. virgin plastic shipped internationally for manufacture of plastic products in other countries
- determine the mass and percentage of United States total plastic waste exported (historic and current estimates) and how these estimates compare to other nations
- identify the origin of plastic materials in the US waste stream (plastic feedstock and manufactured products)
- assess the trend of landfill deposits and debris in US waterways following current plastic export bans to other countries include contributions from land-based industry, littering, mismanaged waste, wastewater treatment plant discharge, river discharge, accidental transportation-related releases, or other significant sources

U.S. Contributions to Global Ocean Plastic Waste

(4) Potential means to reduce US contributions to global ocean plastic waste

Mr. Trash Wheel in Baltimore Inner Harbor

U.S. Contributions to Global Ocean Plastic Waste

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(b) Submit to Congress a report on the study that includes:

(1) the findings

(2) recommendations on knowledge gaps that warrant further scientific investigation

(3) recommendations on the potential value of a national marine debris tracking and monitoring system and how such a system might be designed and implemented

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U.S. Contributions to Global Ocean Plastic Waste

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- consider how the tracking and monitoring system could be used to identify priorities for source reduction and cleanup, assess progress in reducing US contribution to global ocean plastic waste, and determine which existing systems or technologies would be most effective for reducing inputs of plastic waste to the ocean.
- assess how the Marine Debris Monitoring and Assessment Project protocols can inform a nationwide shoreline monitoring effort when implemented at greater spatial and temporal resolution

U.S. Contributions to Global Ocean Plastic Waste

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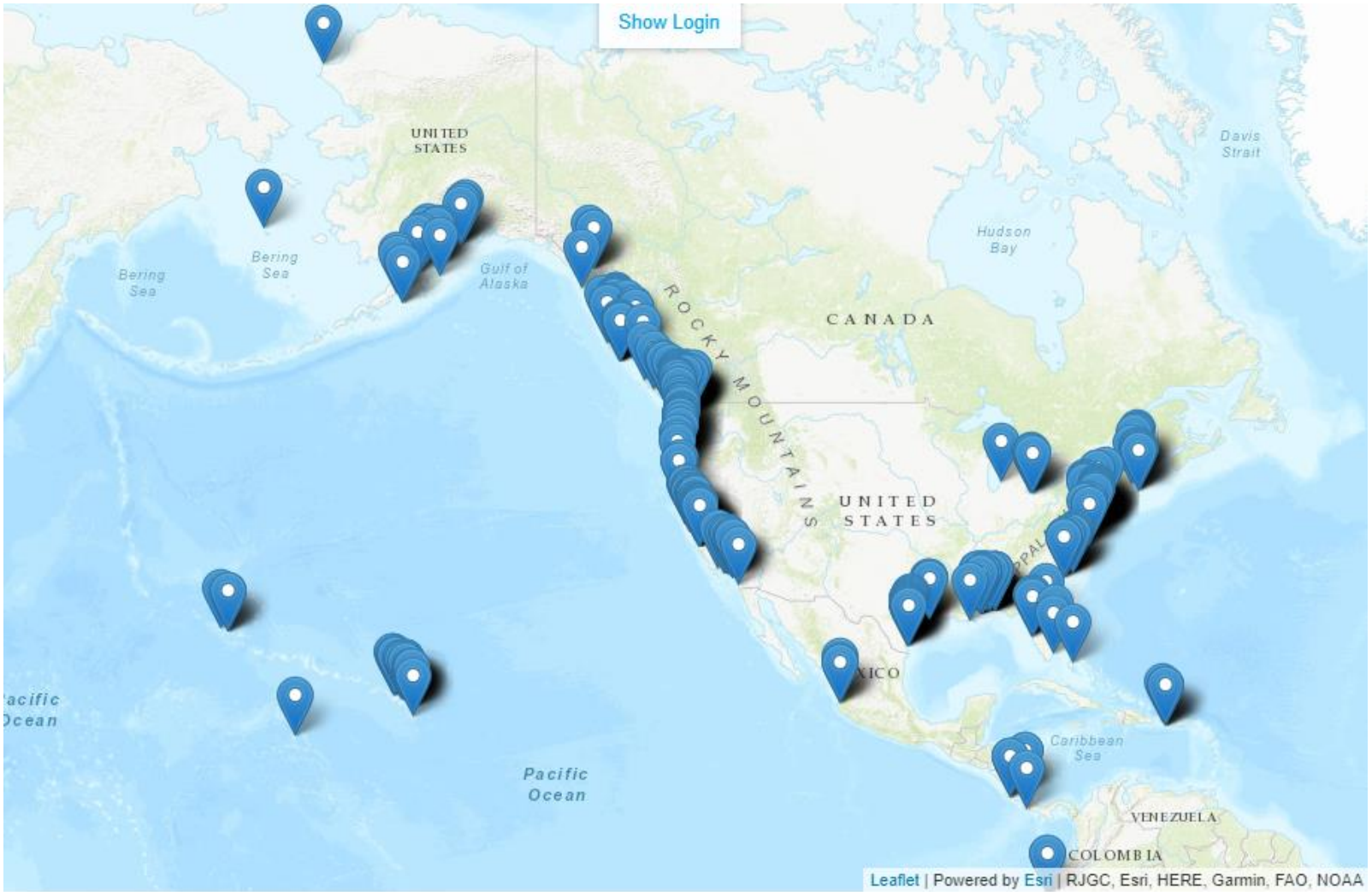
Marine Debris Monitoring and Assessment Project

- Volunteer citizen science initiative
- NOAA-developed standardized monitoring protocols
- Monthly site surveys, recording all debris ≥2.5cm
- Publicly accessible online database

https://marinedebris.noaa.gov/research/marine-debris-monitoring-and-assessment-project

Marine Debris Monitoring and Assessment Project




NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

Thank you

Senate Actions on Marine Debris and the Save Our Seas 2.0 Act

Sens. Dan Sullivan (R-Alaska), Sheldon Whitehouse (D-R.I.), & Bob Menendez (D-N.J.)

Mary-Eileen Manning and Jill Hamilton

Thought Process Behind the Bill

- **Previous SOS bill, passed in 2018, started the conversation**
  The first SOS primarily authorized continued funding for NOAA's Marine Debris Program, a Sense of Congress on global marine debris efforts, and other measures.
- **Needed to use unanimous consent process**
  This legislative process requires all Senators to agree to the bill; this requires working with all offices to address specific issues in bill.
- **Input from academia, environmental and business groups**

SOS 2.0 Introduction June 2019

- Senator Sullivan (R-AK)
- Senator Whitehouse (D-RI)
- Senator Menendez (D-NJ)

Enhancing the Domestic Response

SOS 2.0 BILL COMPONENTS

- Establish a Marine Debris Response Trust Fund
  Allows NOAA it quickly respond to marine debris events.
- Authorize a new Genius Prize
  For innovation on reduce, reuse, recycle plastic
- Create a Marine Debris Foundation
  Congressionally-chartered foundation can "fill in the cracks" in existing marine debris response.
- Conduct new studies
- Studies on **U.S. contribution to global plastic pollution**; microfibers; derelict fishing gear; etc.

save our seas

Global Engagement

SOS 2.0 BILL COMPONENTS

- Formalize U.S. policy on international cooperation to combat marine debris.
- Enhance international outreach of two of the agencies involved in marine debris activities, NOAA and EPA.
- Direct the executive branch to maintain international leadership on marine debris and provide enhanced support for plastic waste mitigation.
- Explore the potential for pursuing a new international agreement on marine debris and directs the executive branch to consider marine debris in future agreements.

Improving Domestic Infrastructure

SOS 2.0 BILL COMPONENTS

- Invest in improved domestic water and waste infrastructure through grants.
- Assess barriers to improving recycling and repurposing of plastic waste.
- Improve understanding of the plastic waste issue through studies that look at human health and explore innovative ways to recycle and reuse plastic waste.
- Provide grants to improve recycling infrastructure to better deal with this pollution.

SOS 2.0 Through Congress

- In Senate, bill was broken into 3 pieces, then reformed: three committees with a wide range of interests reviewed and amended the bill.
- Addressed all Senators' concerns throughout the process. Passed Jan 2020.
- House passed amended version Oct 2020; now post-election push to become law.
- Lessons learned and collecting ideas for follow-on legislation

U.S. Contributions to Global Ocean Plastic Waste

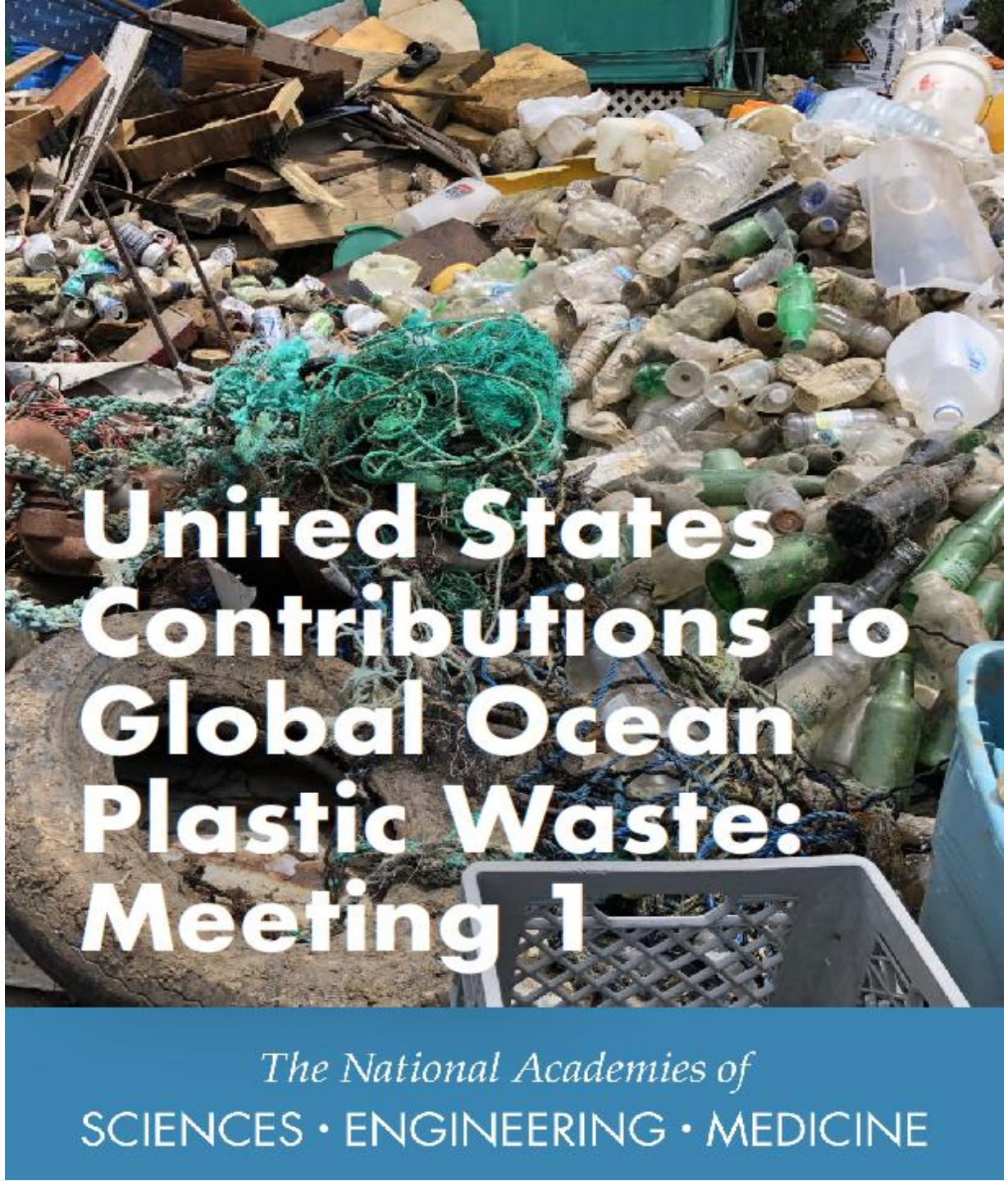
- OF PARTICULAR INTEREST TO SOS DRAFTERS:
- Microplastics, particularly microfibers, and their journey
- Origin of plastic materials in the waste stream, including pre-production
- Plastic imports to U.S.?
- Characterize COVID impacts
- Where plastic waste ends up as a function of time (impact of country import bans, Basel, all domestic disposal choices)
- Do bottle deposits, bag bans etc. change plastic waste stream?
- Methodology for upcoming studies

Best Guess on SOS 2.0 Follow On Efforts

- Possibilities (nothing set):
- Reduction of plastic waste.
- Recycling: Taxes; subsidies; mandates on recycled content; corporate pledges.
- Link all states to issue; not just a coastal problem.
- Ghost gear.
- Response to marine debris crisis events.
- More emphasis on global solutions.
- Evaluation of plastic waste exports/imports.
- Sound bites are very effective.

Thank you!

Mary-Eileen Manning, Mary-Eileen_Manning@sullivan.senate.gov
Jill Hamilton, Jill_Hamilton@whitehouse.senate.gov



BREAK

Please return at 1:10 pm EDT

Recommendations to Panel on U.S. Contributions to Global Ocean Plastic Waste

Stewart Harris
October 28, 2020

Plastics Division Members

Marine Debris - Our View

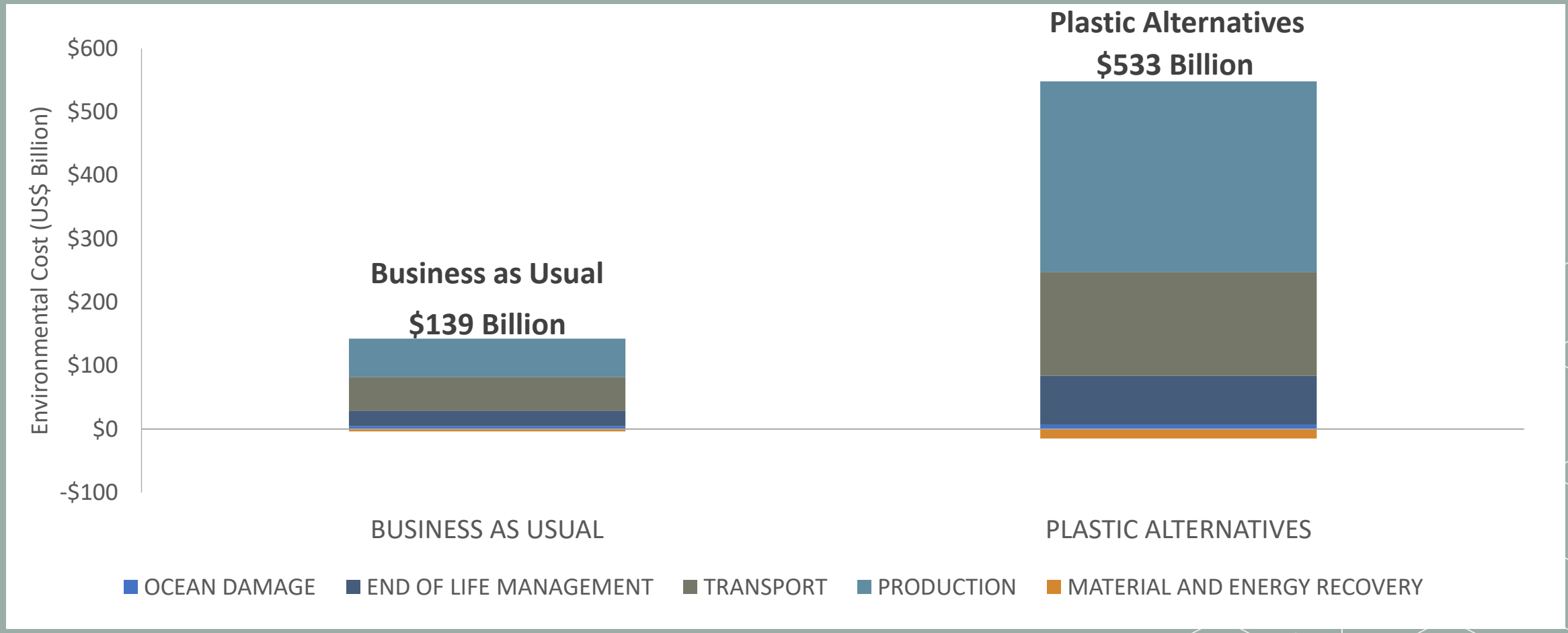
Plastic & other litter in the environment is unacceptable

Plastics deliver significant societal benefits

Plastic makers have a role in providing solutions

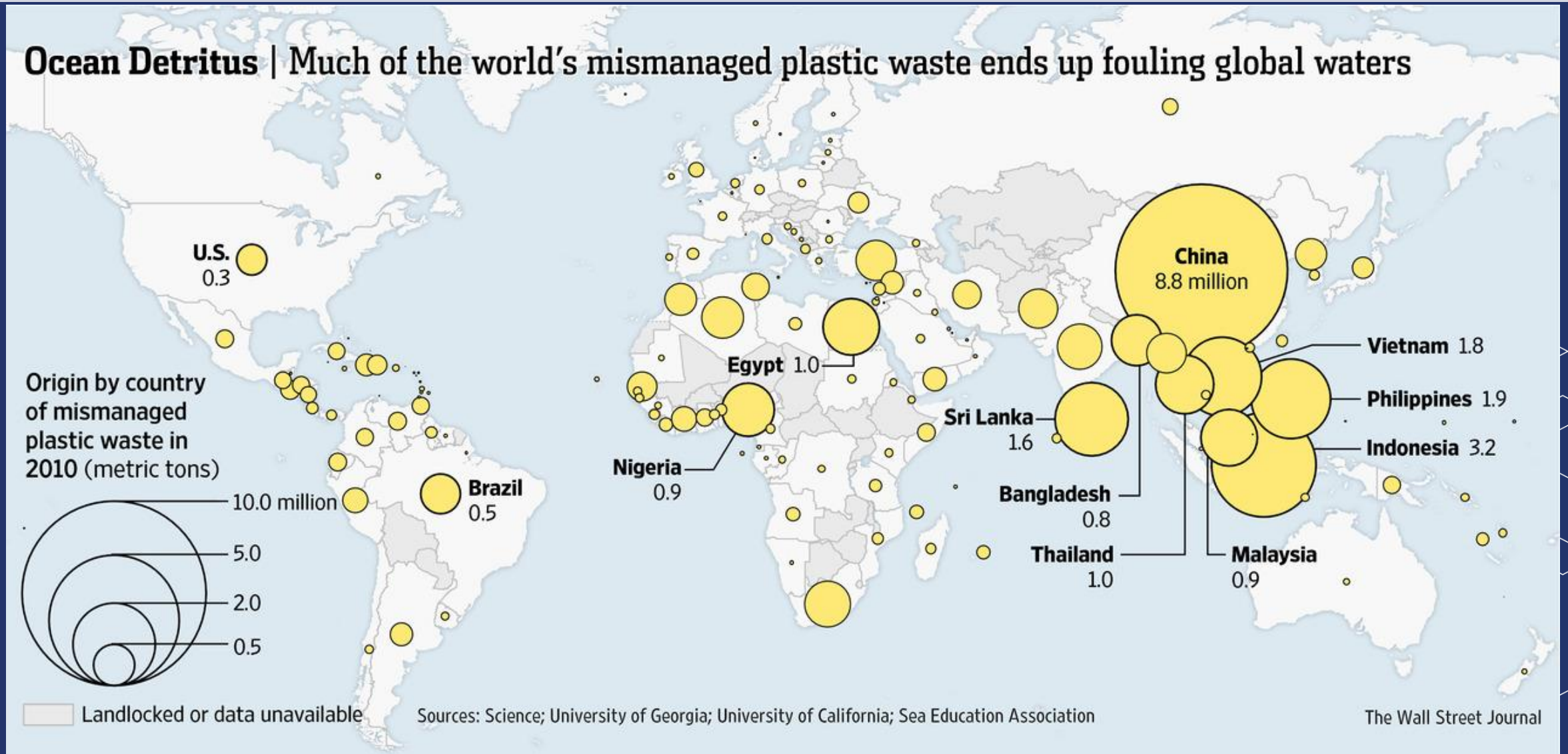
Plastics and Sustainability

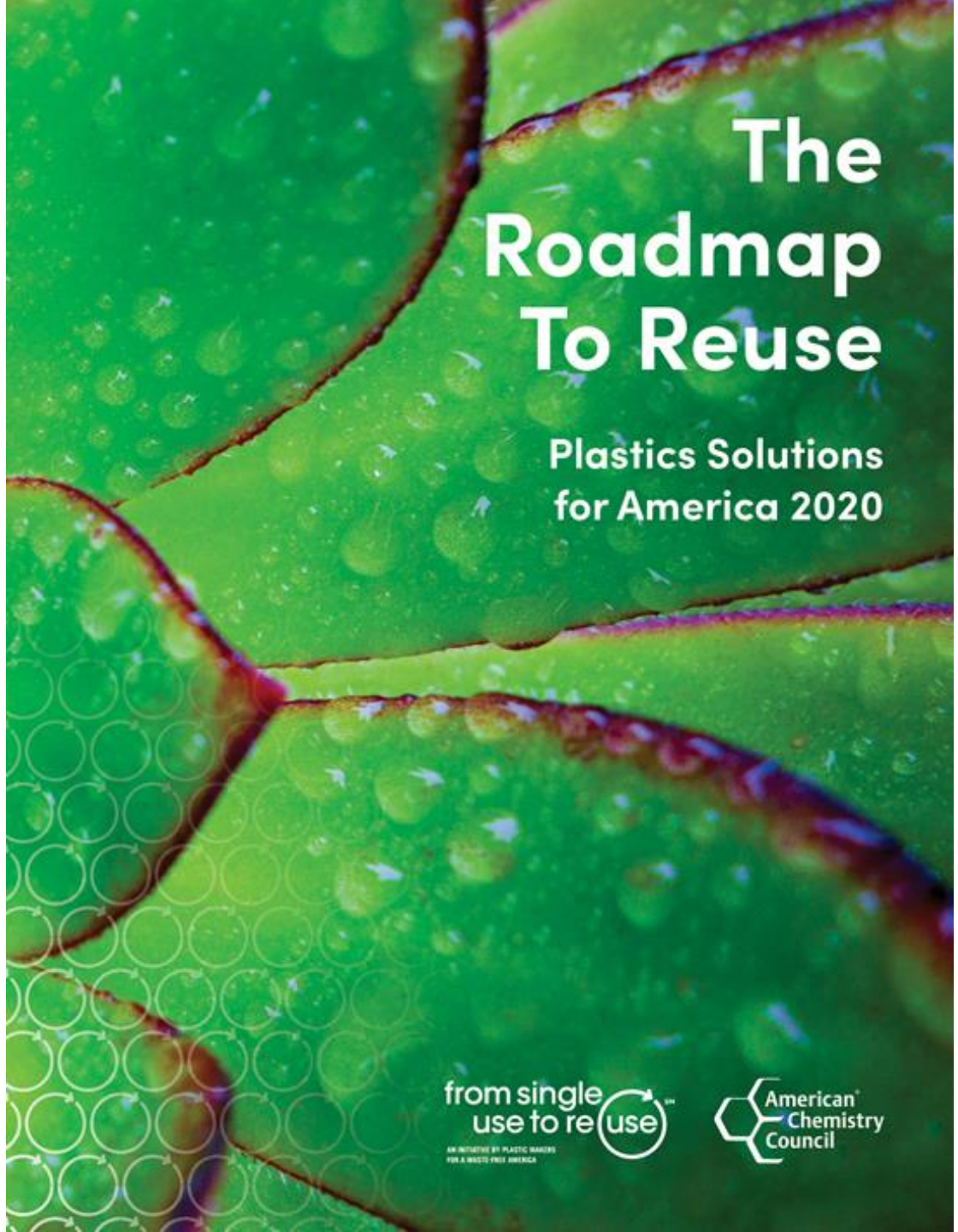
Environmental cost of plastic use in consumer goods is 3.8 times less than alternatives



Trucost, Plastics and Sustainability: A Valuation of Environmental Benefits, Costs and Opportunities for Continuous Improvement, July 2016.

Sources of Plastic Marine Debris




The Roadmap To Reuse
Plastics Solutions for America 2020
from single use to reuse
American Chemistry Council

Targets

ACC and its Plastic Division members set two U.S. goals to eliminate plastic packaging waste by 2040.

100% of plastic packaging will be recyclable or recoverable

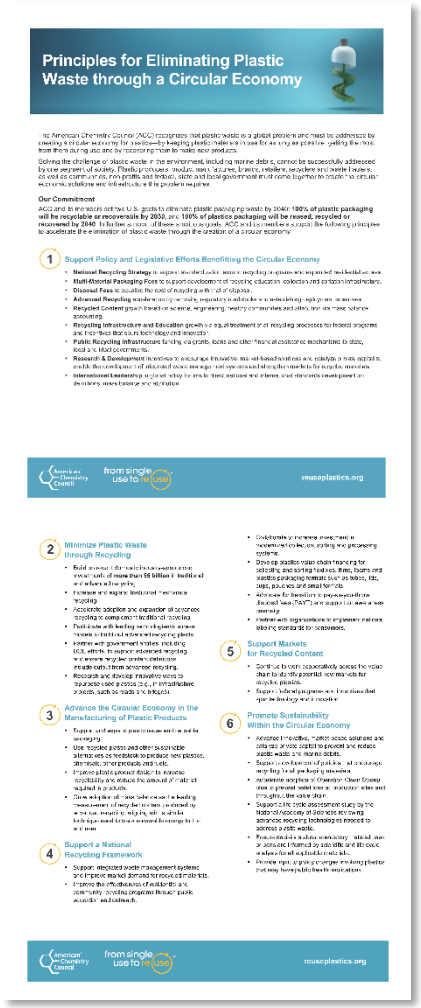
100% of plastics packaging will be reused, recycled or recovered

Elements

2030 & 2040 Goals

- 100% of plastic packaging will be recyclable or recoverable by 2030.
- 100% of plastics packaging will be reused, recycled or recovered by 2040.

Guiding Principles


Principles for Eliminating Plastic Waste through a Circular Economy

The American Chemistry Council (ACC) recognizes that plastic waste is a global problem and must be addressed by creating a circular economy for plastics—by keeping plastic materials in use for as long as possible, getting the most from them during use and by recovering them to make new products.

Solving the challenge of plastic waste in the environment, including marine debris, cannot be successfully addressed by one segment of society. Plastic producers, resin makers, converters, brand owners, retailers, recyclers and waste haulers, as well as communities, non-profits and retailers, state and local governments must come together to create "no-circular" economic solutions and infrastructure will be a problem no-primer.

Our Commitment

ACC and its members set two U.S. goals to eliminate plastic packaging waste by 2040: 100% of plastic packaging will be recyclable or recoverable by 2030, and 100% of plastics packaging will be reused, recycled or recovered by 2040. To achieve success, all these goals must be met. ACC will continue to work to accelerate the elimination of plastic waste through the creation of a circular economy.

1 Support Policy and Legislative Efforts Benefitting the Circular Economy

- National Recycling Strategy to support standardized public waste recycling programs and required technical assistance.
- Multi-Material Packaging Fees to support development of recycling education collection and certain infrastructure.
- Disposal Fees to stabilize the cost of recycling with cost of disposal.
- Advanced Recycling standards and clear, safe, regulatory solutions for advanced recycling technologies.
- Recycled Content growth based on science, engineering, healthy communities and safety, not one-size science accounting.
- Recycling Infrastructure and Education growth via equal treatment of all recycling processes for federal programs and incentives that solve technology and innovation.
- Public Recycling Infrastructure funding via grants, loans and other financial assistance mechanisms to state, local and tribal governments.
- Research & Development incentives to encourage innovative, market-based solutions and catalysts to help expand the development of educated consumer engagement and recycling markets for recycled materials.
- International Leadership in global policy forums that address and enhance shared standards development on definitions, waste balance and recycling.

rouseplastics.org

2 Minimize Plastic Waste through Recycling

- Build a robust U.S. recycling system to recover more than $5 billion in additional recyclable materials by 2025.
- Increase mechanical and organic feedstock recycling.
- Accelerate adoption and expansion of advanced recycling to complement facilities of recycling.
- Participate with leading non-obligations across industry and where we play.
- Partner with government entities including DOE, EPA, to support advanced recycling and economic new public-private recycle goals, from economic recycling.
- Research and develop innovative ways to repurpose used plastics (e.g., in infrastructure projects, such as roads and bridges).

3 Advance the Circular Economy in the Manufacturing of Plastic Products

- Support and adopt practices and technologies for recycling.
- Use recycled plastics and other sustainable alternatives as feedstock to produce new plastics, chemicals, other products and fuels.
- Improve plastic product design to increase recyclability and reduce the amount of material required in products.
- Drive adoption of these solutions including measurement of recycled content, as defined by international recycling standards, with a whole lifecycle-based science-based approach to address plastic waste.

4 Support a National Recycling Framework

- Support integrated waste management systems and improve market demand for recycled materials.
- Improve the effectiveness of residents' and community recycling programs through public education and outreach.

5 Support Markets for Recycled Content

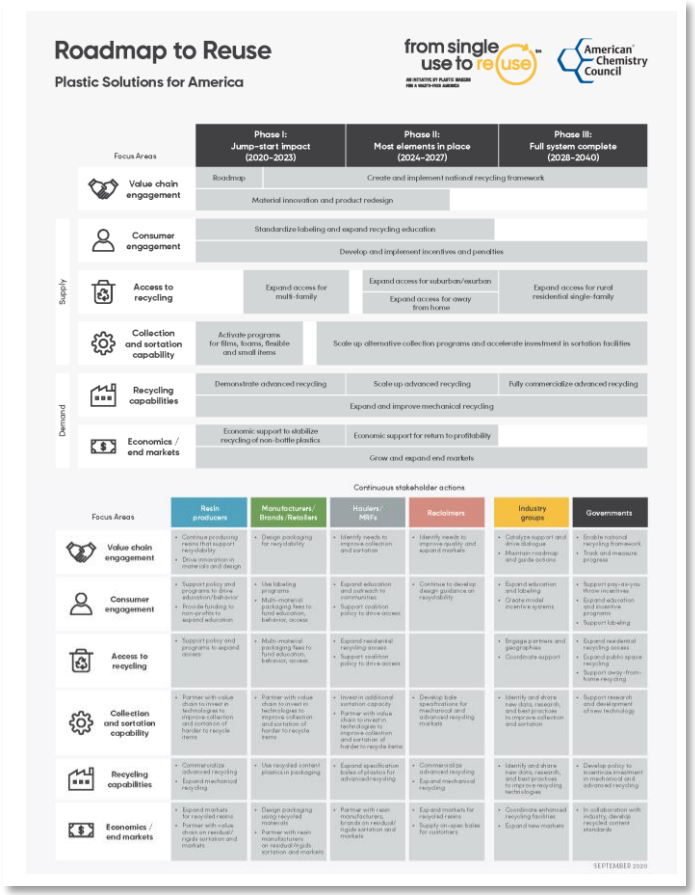
- Continue to work collaboratively across the value chain to identify potential new markets for recycled plastics.
- Support labeling programs and standardized recycling labeling and terminology for consumers.

6 Promote Sustainability Within the Circular Economy

- Advance innovative, market-based solutions and policies to drive capital to prevent and reduce plastic waste and marine debris.
- Support enforcement of policies and encourage recycling via deposit/packaging incentives.
- Accelerate adoption of Operation Clean Sweep and prevent pellet loss in manufacturing sites and throughout the value chain.
- Support a life cycle assessment study by the National Academy of Sciences to develop advanced recycling technology as needed to address plastic waste.
- Promote a robust voluntary international and domestic market by identifying and eliminating barriers to trade in recyclables.
- Promote open, policy-driven trade to better meet new public health regulations.

rouseplastics.org

Roadmap to Reuse


Roadmap to Reuse

Plastic Solutions for America

from single use to reuse

American Chemistry Council

Focus Areas	Phase I: Jump-start impact (2020–2023)	Phase II: Most elements in place (2024–2027)	Phase III: Full system complete (2028–2040)
Value chain engagement	Roadmap	Create and implement national recycling framework	
	Material innovation and product redesign		
Consumer engagement	Standardize labeling and expand recycling education		
	Develop and implement incentives and penalties		
Supply: Access to recycling	Expand access for multi-family	Expand access for suburban/exurban	Expand access for rural residential single-family
		Expand access for away from home	
Supply: Collection and sortation capability	Activate programs for films, foams, flexible and small items	Scale up alternative collection programs and accelerate investment in sortation facilities	
Demand: Recycling capabilities	Demonstrate advanced recycling	Scale up advanced recycling	Fully commercialize advanced recycling
	Expand and improve mechanical recycling		
Demand: Economics / end markets	Economic support to stabilize recycling of non-bottle plastics	Economic support for return to profitability	
	Grow and expand end markets		

Continuous stakeholder actions

Focus Areas	Resin producers	Manufacturers/ Brands / Retailers	Haulers/ MRFs	Reclaimers	Industry groups	Governments
Value chain engagement	• Continue producing resins that support recyclability • Drive innovation in materials and design	• Design packaging for recyclability	• Identify needs to improve collection and sortation	• Identify needs to improve quality and expand markets	• Catalyze support and drive dialogue • Maintain roadmap and guide actions	• Enable national recycling framework • Track and measure progress
Consumer engagement	• Support policy and programs to drive education/behavior • Provide funding to non-profits to expand education	• Use labeling programs • Multi-material packaging fees to fund education, behavior, access	• Expand education and outreach to communities • Support coalition policy to drive access	• Continue to develop design guidance on recyclability	• Expand education and labeling • Create modal incentive systems	• Support pay-as-you-throw incentives • Expand education and incentive programs • Support labeling
Access to recycling	• Support policy and programs to expand access	• Multi-material packaging fees to fund education, behavior, access	• Expand residential recycling access • Support coalition policy to drive access		• Engage partners and geographies • Coordinate support	• Expand residential recycling access • Expand public space recycling • Support away-from-home recycling
Collection and sortation capability	• Partner with value chain to invest in technologies to improve collection and sortation of harder to recycle items	• Partner with value chain to invest in technologies to improve collection and sortation of harder to recycle items	• Invest in additional sortation capacity • Partner with value chain to invest in technologies to improve collection and sortation of harder to recycle items	• Develop bale specifications for mechanical and advanced recycling markets	• Identify and share new data, research, and best practices to improve collection and sortation	• Support research and development of new technology
Recycling capabilities	• Commercialize advanced recycling • Expand mechanical recycling	• Use recycled content plastics in packaging	• Expand specification bales of plastics for advanced recycling	• Commercialize advanced recycling • Expand mechanical recycling	• Identify and share new data, research, and best practices to improve recycling technologies	• Develop policy to incentivize investment in mechanical and advanced recycling
Economics / end markets	• Expand markets for recycled resins • Partner with value chain on residual/rigids sortation and markets	• Design packaging using recycled materials • Partner with resin manufacturers on residual/rigids sortation and markets	• Partner with resin manufacturers, brands on residual/rigids sortation and markets	• Expand markets for recycled resins • Supply on-spec bales for customers	• Coordinate enhanced recycling facilities • Expand new markets	• In collaboration with industry, develop recycled content standards

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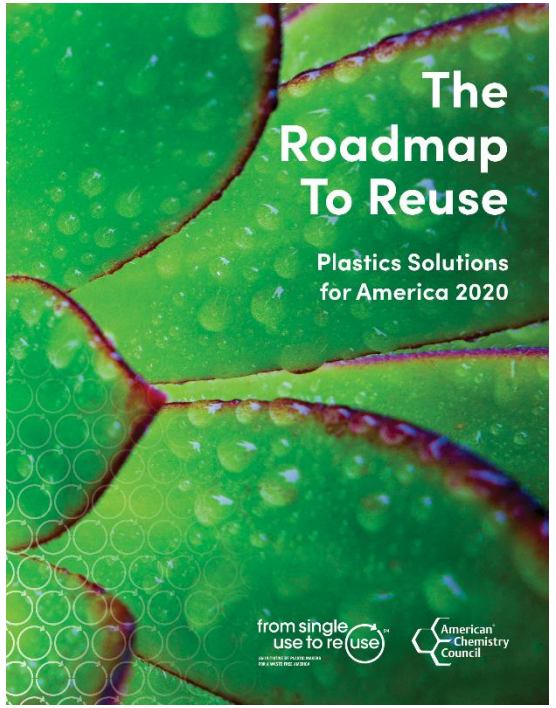
Plastic Solutions for America Report



Roadmap to Reuse

Focus Areas

1. Value chain engagement
2. Consumer engagement
3. Access to recycling
4. Collection and sortation capability
5. Recycling capabilities
6. Economics / end markets

Roadmap to Reuse

Plastic Solutions for America

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Supply	Consumer engagement	Standardize labeling and expand recycling education		
		Develop and implement incentives and penalties		
	Access to recycling	Expand access for multi-family	Expand access for suburban/exurban	Expand access for rural residential single-family
			Expand access for away from home	
	Collection and sortation capability	Activate programs for films, foams, flexible and small items	Scale up alternative collection programs and accelerate investment in sortation facilities	
Demand	Recycling capabilities	Demonstrate advanced recycling	Scale up advanced recycling	Fully commercialize advanced recycling
		Expand and improve mechanical recycling		
	Economics / end markets	Economic support to stabilize recycling of non-bottle plastics	Economic support for return to profitability	
		Grow and expand end markets		

SEPTEMBER 2020

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Consumer engagement	• Support policy and programs to drive education/behavior • Provide funding to non-profits to expand education	• Use labeling programs • Multi-material packaging fees to fund education, behavior, access	• Expand education and outreach to communities • Support coalition policy to drive access	• Continue to develop design guidance on recyclability	• Expand education and labeling • Create model incentive systems	• Support pay-as-you throw incentives • Expand education and incentive programs • Support labeling
Access to recycling	• Support policy and programs to expand access	• Multi-material packaging fees to fund education, behavior, access	• Expand residential recycling access • Support coalition policy to drive access		• Engage partners and geographies • Coordinate support	• Expand residential recycling access • Expand public space recycling • Support away-from-home recycling
Collection and sortation capability	• Partner with value chain to invest in technologies to improve collection and sortation of harder to recycle items	• Partner with value chain to invest in technologies to improve collection and sortation of harder to recycle items	• Invest in additional sortation capacity • Partner with value chain to invest in technologies to improve collection and sortation of harder to recycle items	• Develop bale specifications for mechanical and advanced recycling markets	• Identify and share new data, research and best practices to improve collection and sortation	• Support research and development of new technology
Recycling capabilities	• Commercialize advanced recycling • Expand mechanical recycling	• Use recycled content plastics in packaging	• Expand specification bales of plastics for advanced recycling	• Commercialize advanced recycling • Expand mechanical recycling	• Identify and share new data, research and best practices to improve recycling technologies	• Develop policy to incentivize investment in mechanical and advanced recycling
Economics / end markets	• Expand markets for recycled resins • Partner with value chain on residual/ rigids sortation and markets	• Design packaging using recycled materials • Partner with resin manufacturers on residual/rigids sortation and markets	• Partner with resin manufacturers, brands on residual/ rigids sortation and markets	• Expand markets for recycled resins • Supply on-spec bales for customers	• Coordinate enhanced recycling facilities • Expand new markets	• In collaboration with industry, develop recycled content standards

SEPTEMBER 2020

Guiding Principles

We recognize that plastic waste is a global problem and must be addressed by creating a circular economy for plastics—by keeping plastic materials in use for as long as possible, getting the most from them during use and by recovering them to make new products.

We support policies and legislative efforts that will encourage investment, modernization and expansion of our nation's recycling infrastructure and promote a circular economy for plastics.

Guiding Principles

1. **Support Policy and Legislative** Efforts Benefitting the Circular Economy
2. **Minimize** Plastic Waste Through Recycling
3. **Advance the Circular Economy** in the Manufacturing of Plastic Products
4. **Support** a **National** Recycling **Framework**
5. **Support Markets** for Recycled Content
6. **Promote Sustainability** Within the Circular Economy

Modernizing Plastics Recycling

64
Projects

$5.3B
Worth

POTENTIAL TO DIVERT

4.0M
Metric tons of landfill materials

83% of these announced investments are in the growing field of advanced recycling, which is crucial modern infrastructure needed to accelerate a circular economy for plastics.

Investments & Commitments

Shell

1M tons of plastic waste annually used in global chemical plants by 2025

sabic

EASTMAN

DOW

avangardinnovative

lyondellbasell

Produce and market 2M tons recycled and renewable-based polymers annually by 2030

AmSty

agilyx

INEOS STYROLUTION

Infrastructure Investments, Circular Solutions

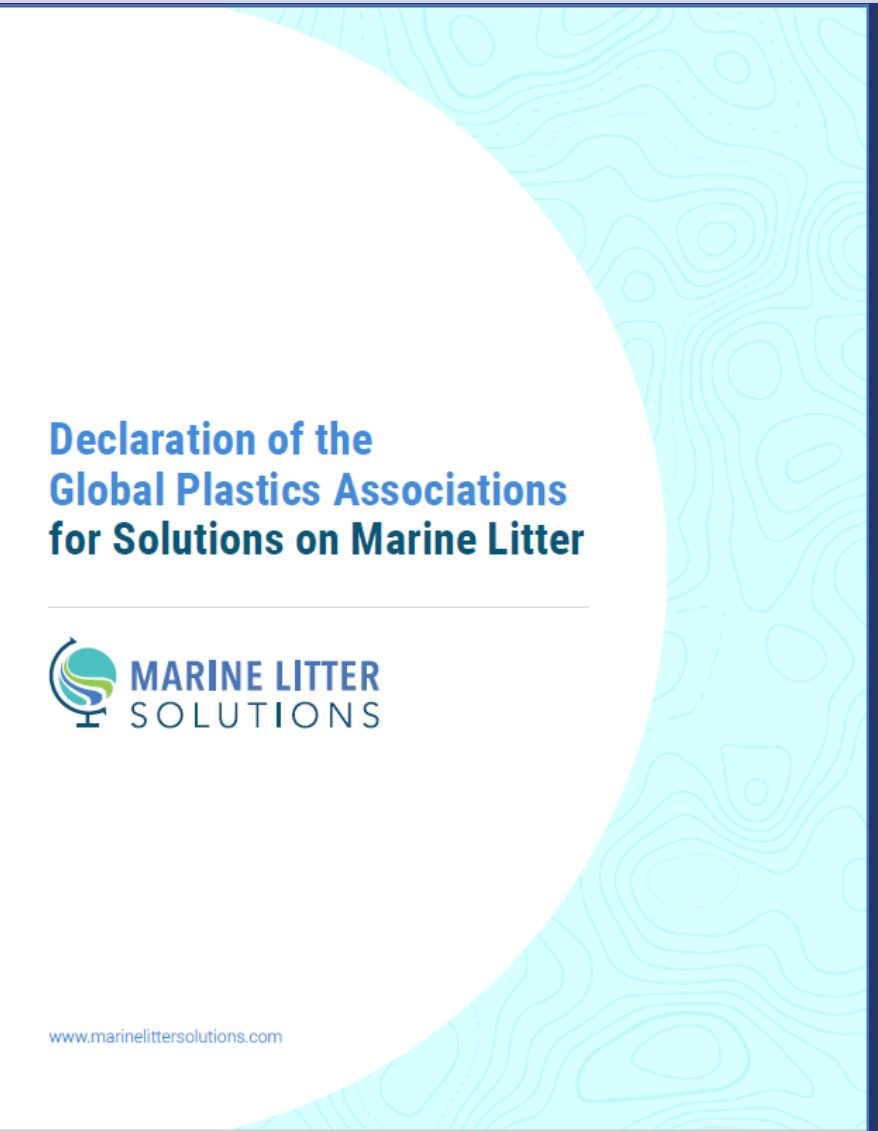
Examples

Recommendations

- $5.3 billion in plastics recycling capacity investments
  - 64 announced projects in mechanical and advanced recycling
  - Potential to divert over 4 million metric tons from landfills annually
- Exports of plastic scrap for recycling reduced with implementation of Basel annex changes in January 2021
- Plastic resin exports may be a misleading indicator, as not all exported resin will be converted into packaging
- National marine debris tracking system critical to understanding leakage, determining effectiveness of actions, and measuring progress

Plastics industry efforts to reduce marine debris

Global Plastics Alliance



- Announced at UN/NOAA 5th International Marine Debris Conference, March 2011
- Six-point strategy for industry action
- Advocates close cooperation with range of stakeholders to create solutions
- Transparent progress reports every 2 years

Declaration Contents

We will:

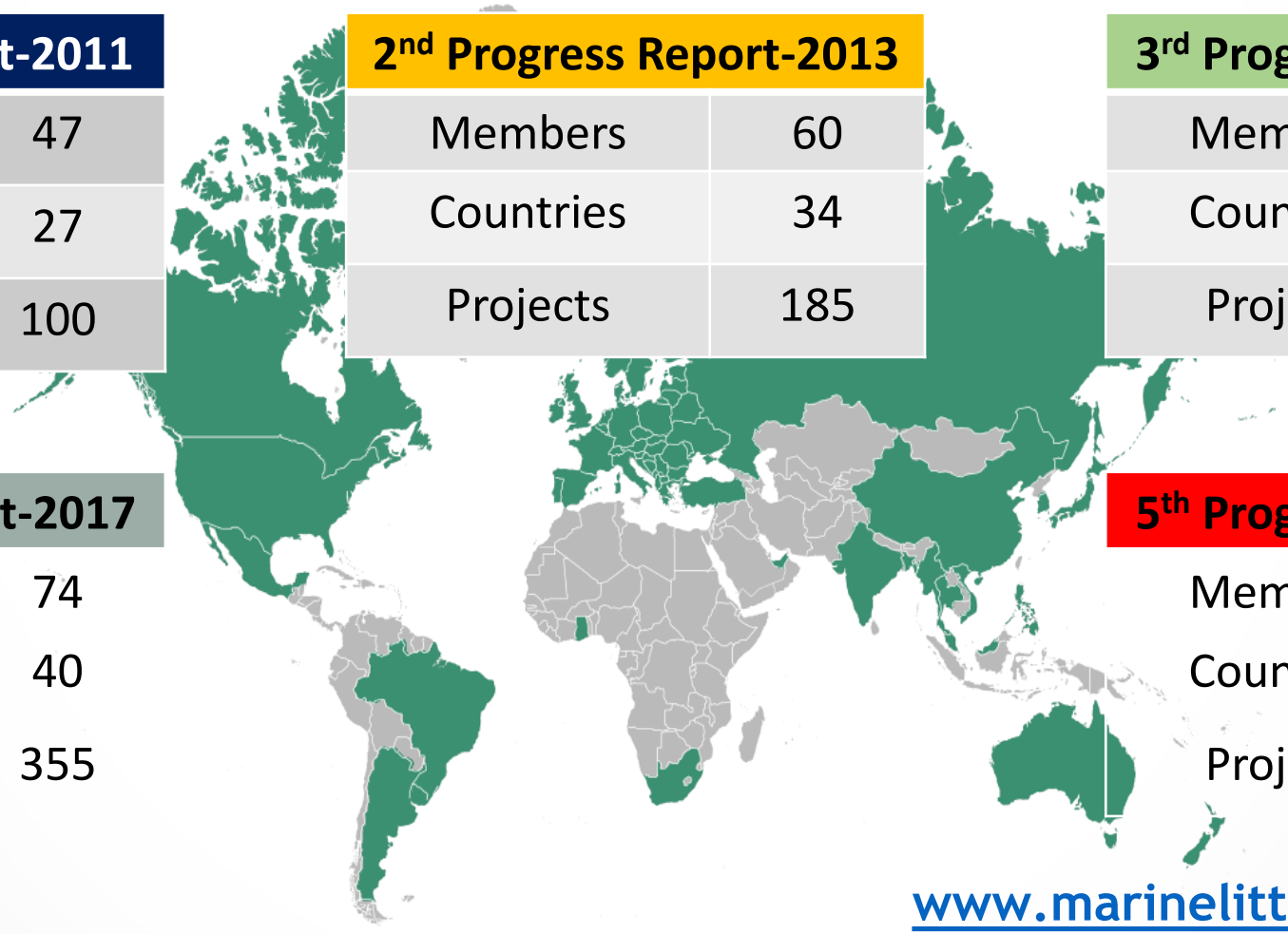
- Contribute solutions through partnerships to prevent marine debris
- Research to understand scope, origin, impacts
- Promote enforcement of existing laws to prevent marine litter
- Spread knowledge of efficient waste management systems
- Enhance recycling/energy recovery opportunities
- Steward plastic pellets from supplier to customer

Making Progress

1st Progress Report-2011	
Members	47
Countries	27
Projects	100

2nd Progress Report-2013	
Members	60
Countries	34
Projects	185

3rd Progress Report-2015	
Members	65
Countries	34
Projects	260

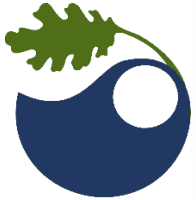


4th Progress Report-2017	
Members	74
Countries	40
Projects	355

5th Progress Report-2020	
Members	80
Countries	43
Projects	395

www.marinelittersolutions.com

Trash Free Seas Alliance®

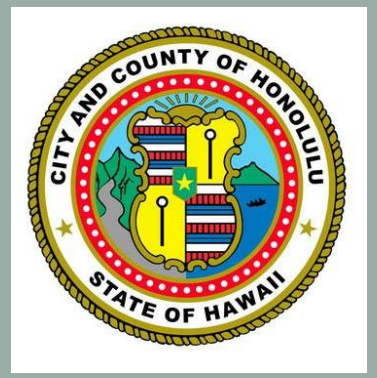


Trash Free Seas Alliance®

- Research to understand sources
- Which interventions work
- Evaluated funding options
- Built platform & launch pilots

CIRCULATE CAPITAL

Marine Debris Partnerships



Promoting Recycling

America Recycles Day
NOVEMBER 15

MATERIALS RECOVERY FOR THE FUTURE

THE RECYCLING PARTNERSHIP

Promoting Policy

Supported Microbeads Free Waters Act of 2015

Supported Save Our Seas Act versions 1.0 & 2.0

Supporting straws on request policies

Stewarding Plastic Pellets

- Best practices to contain pellets, flakes, and powder
- Covers manufacturing through transportation and end use
- OCS blue – metric reporting

Operation Clean Sweep® | blue

Thank you!

Stewart_Harris@americanchemistry.com
202-249-6626
MarineLitterSolutions.com

The Association of Plastic Recyclers and Solutions for US Contributions to Global Plastic Waste

Steve Alexander,

APR President & CEO

The Association of Plastic Recyclers

The Association of Plastic Recyclers

The only trade association focused exclusively on plastics recycling

The Voice of Plastics Recycling®

Companies committed to the success of plastics recycling

The Association of Plastic Recyclers

Increase Supply

Enhance Quality

Expand Demand

Communicate Value

APR Primary Goals

The Association of Plastic Recyclers

- APR Design® Guide for Plastics Recyclability
- Training
- APR Recycling Demand Champions
- PCR Certification
- Resource Development
- Education
- Advocacy / Legislative Activity

The Association of Plastic Recyclers

You can’t have circularity without recycling…

Market Demand Monetizes the System

2019

APR RECYCLING DEMAND CHAMPIONS YEAR END REPORT

Consistent, reliable demand = mature, vibrant and sustainable recycling!

RECYCLING DEMAND CHAMPIONS

Champion
Nestlé Waters
Denton PLASTICS
avangard innovative
ECO PRODUCTS
Unilever
UPM
UPM RAFLATAC
PAC WORLDWIDE
Berry
P&G
QRS
Keurig DrPepper
PakTech
ENVISION PLASTICS
Annie's
DOW CLEAN TECH
Fabri-Kal
DART

INCREASED THEIR PCR USE BY

25.9 MILLION POUNDS OF POSTCONSUMER RESINS

PCR USES INCLUDE:

- PALLETS
- GAYLORD LINERS
- LABELS
- PACKAGING
- CAN LINERS
- TRASH & RECYCLING BINS
- FILM PRODUCTS

RESULTING IN THESE ESTIMATED IMPACTS

GREENHOUSE GAS EMISSIONS FROM **6,369 PASSENGER VEHICLES** DRIVEN FOR 1 YEAR*

JOB CREATION IN PLASTIC RECYCLING **FOR 337 PEOPLE****

ALL THE PLASTIC RECYCLABLES FROM A CITY THE SIZE OF **MINNEAPOLIS, MINNESOTA***** (422,331 POPULATION)

Data sources:
*EPA WARM Model
**Private consultant/industry experts
***The Recycling Partnership

THE APR RECYCLING DEMAND CHAMPIONS - STRENGTHENING AND INCREASING DOMESTIC DEMAND FOR RECYCLABLE PLASTICS

The Association of Plastic Recyclers

FOR IMMEDIATE RELEASE – September 25, 2020

California Governor Signs Mandatory Recycled Content Bill

Nation's first recycled content requirement for plastic beverage containers will increase collection and supply, expand market demand

The Association of Plastic Recyclers (APR) applauds California Governor Gavin Newsom today for signing the United States' first ever recycled content mandate for plastic beverage containers, California Assembly Bill 793. The law requires all plastic bottles covered by the state's container redemption program average at least 15% postconsumer resin (PCR) starting in 2022. The recycled content mandate increases to 25% in 2025 and 50% in 2030.

As the international trade association representing the plastics recycling industry, APR strongly supports efforts to increase collection and supply of postconsumer recycled plastics to augment and sustain recycled content initiatives. **The APR was the first plastics related organization to publicly support mandatory recycled content legislation in 2006.**

Investment in domestic recycling and solid waste infrastructure is needed.

The Association of Plastic Recyclers

www.plasticsrecycling.org
Steve@PlasticsRecycling.org

Stemming the Tide at Home

U.S. Contributions to Ocean Plastic Waste Meeting

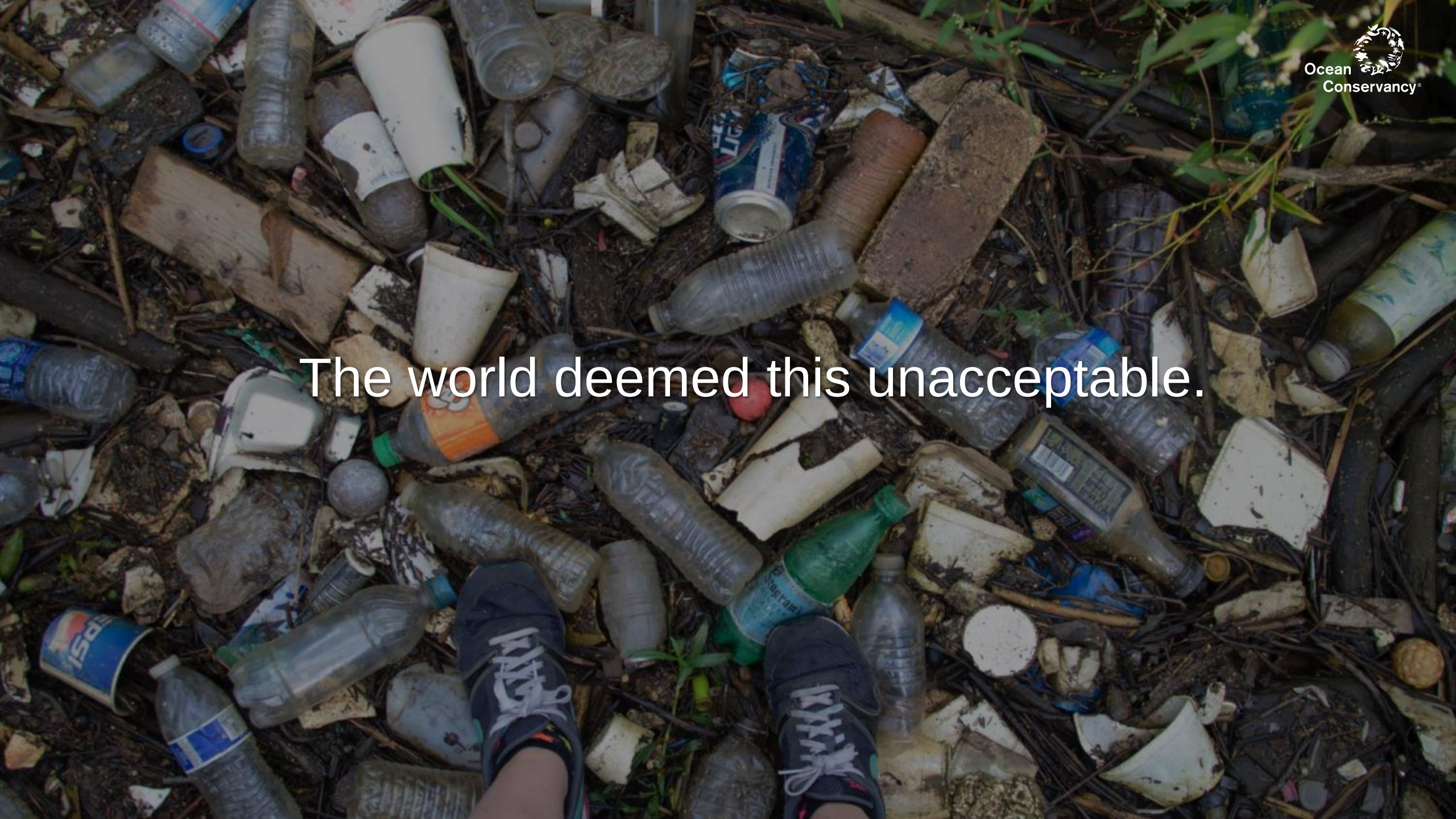
NICHOLAS J. MALLOS

October 28, 2020

Ocean Conservancy®

8 million metric tons
or one garbage truck load
of plastic per minute

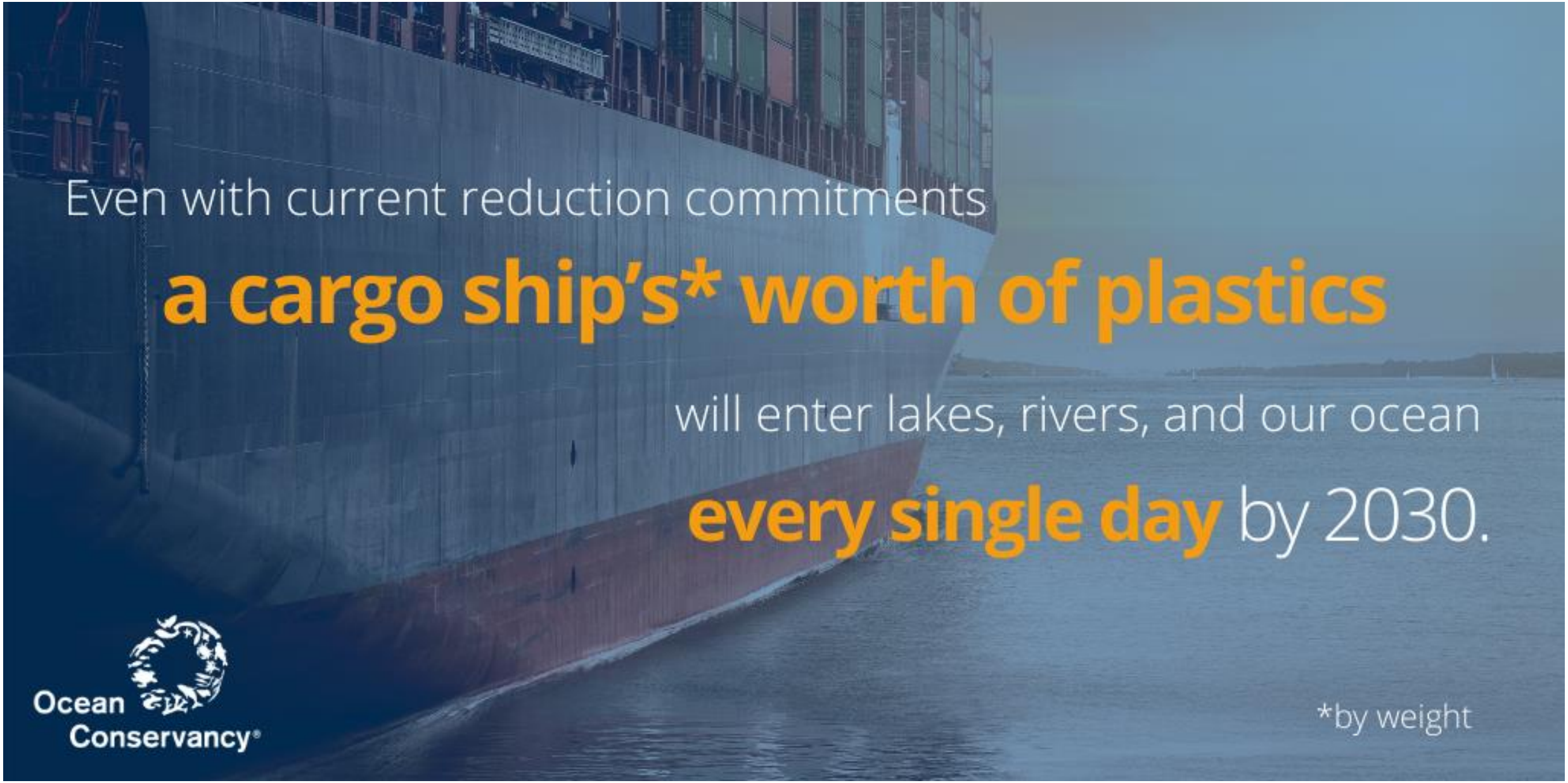
Jambeck et al., 2015 *Science*


Ocean
Conservancy
The world deemed this unacceptable.

24 – 35 Mt of plastic emissions* per year in 2020

*Into all aquatic ecosystems

Borelle et al. 2020, *Science*



Borelle et al. 2020, *Science*

How much effort will it take to reduce emissions to an emissions target <8 Mt?

Reduce Plastic Waste

Plastic Waste Reduction	Waste Management	Plastic Pollution Cleanup
25 – 40% reduction per capita	Managed Waste level increased to: 60 - 99%	Clean up 40% of annual plastic emissions

Borelle et al. 2020, *Science*

Responsibility to tackle (ocean) plastic waste in the United States

Ocean Conservancy™

Recommendations to the Committee on the Statement of Task

- How is current international trade of waste plastics affecting what's going into ocean from US?
- What means exist to secure better data at the national level on illegal dumping and littering?
- What effects does current management, or lack thereof, have on marginalized, underserved and/or marginalized communities in the U.S. and abroad?

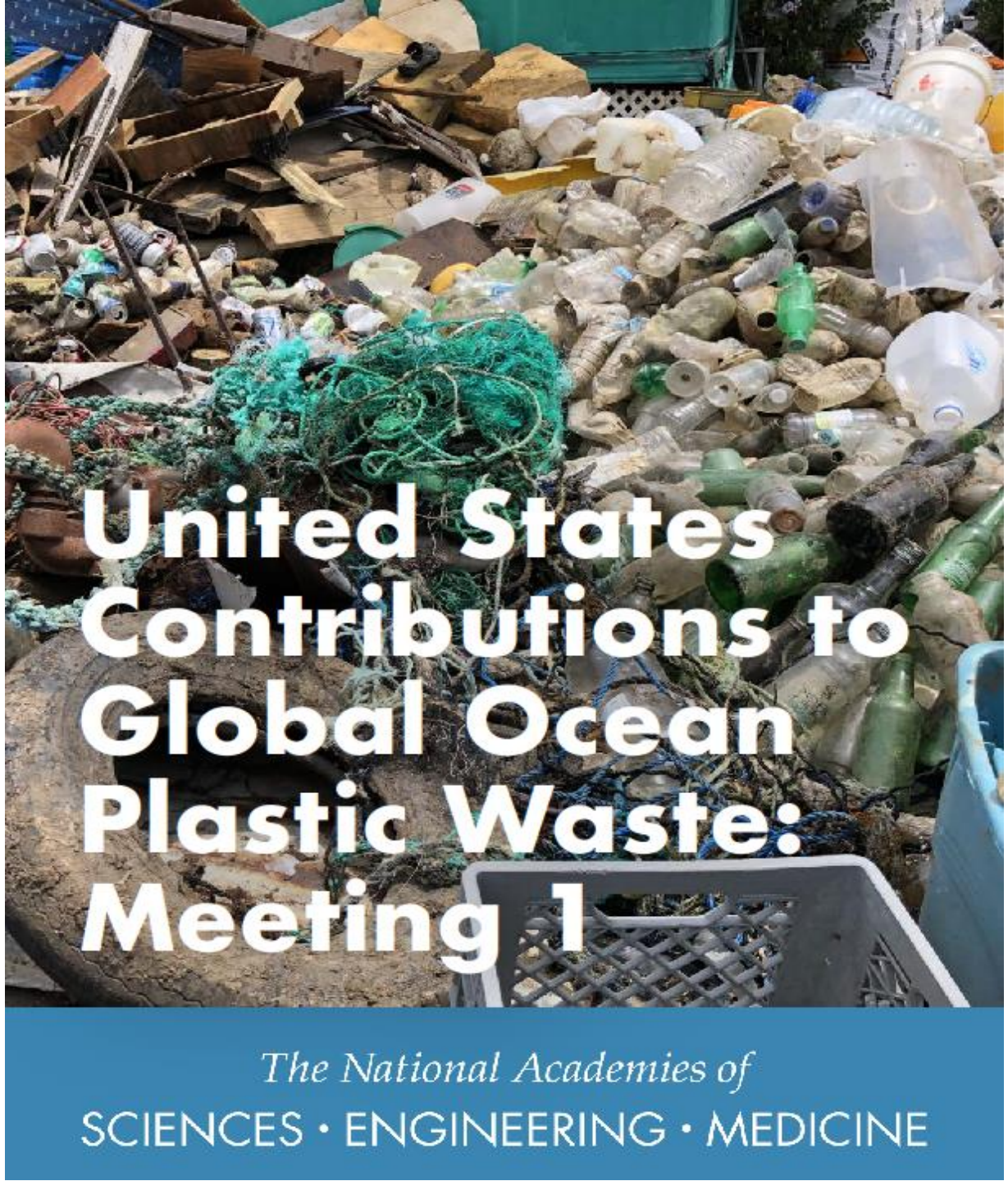
Recommendations to the Committee on the Statement of Task

- Consideration of abandoned, lost or otherwise discarded fishing gear (ALDFG) (2.b.)
- Consideration of distribution/fate in sediments and biota (2.c.)
- Consideration GHG emissions implications of transport of recycled plastic materials from the U.S. to other nations (3.e.)
- Consideration of linking a national marine debris tracking and monitoring system to state-level inventories of waste management rates (e.g., composting, recycling, etc.) to explore specific linkages between debris abundance and waste management/policies (4.a.)
- Consideration of front-end, production dynamics in terms of reducing plastic waste and the associated GHG emissions (6.)

Thank You

Ocean Conservancy®

ADD WINNIE”S SLIDES HERE


United States Contributions to Global Ocean Plastic Waste: Meeting 1
The National Academies of
SCIENCES • ENGINEERING • MEDICINE

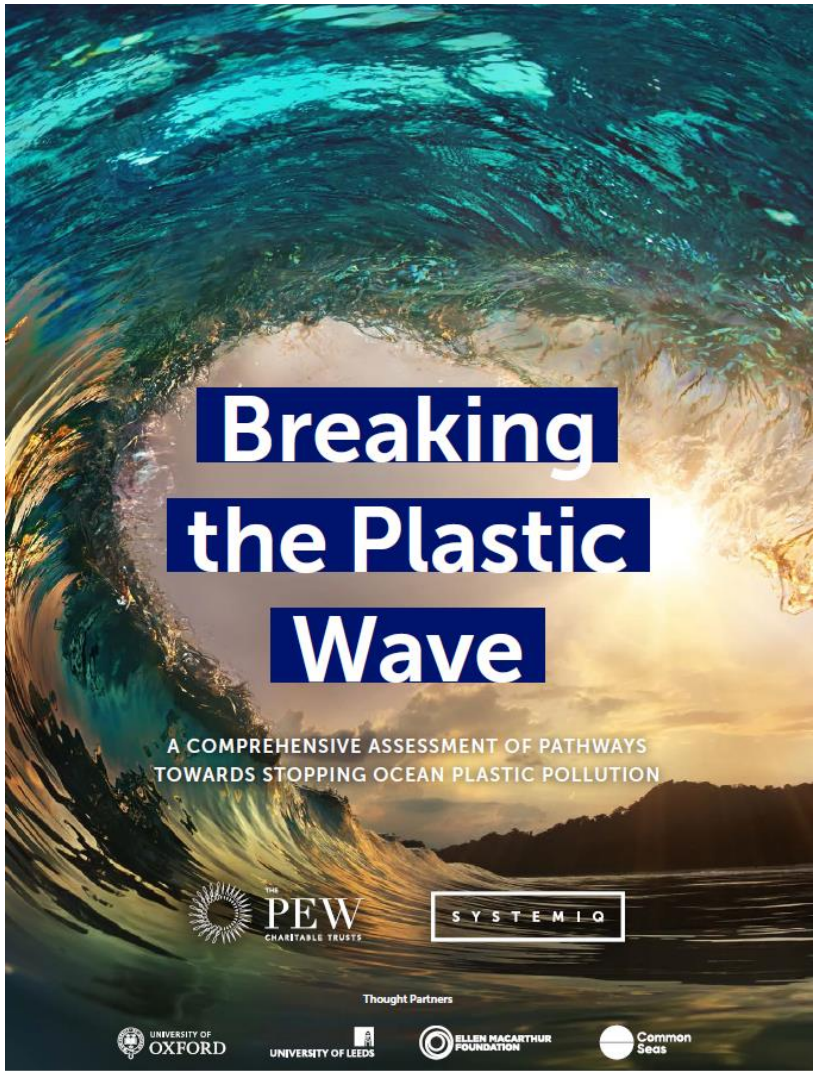
THANK YOU!

BREAKING THE PLASTIC WAVE

Winnie Lau, Senior Manager
Preventing Ocean Plastics
The Pew Charitable Trusts

The National Academies of Sciences, Engineering, and Medicine
United States Contributions to Global Ocean Plastic Waste Meeting
October 28, 2020

BREAKING THE PLASTIC WAVE



SYSTEMIQ

UNIVERSITY OF OXFORD

UNIVERSITY OF LEEDS

ELLEN MACARTHUR FOUNDATION

Common Seas

THE PEW CHARITABLE TRUSTS

EXPERT PANEL

Dr. Richard Bailey (UK)
Professor,
University of Oxford

Dr. Julien Boucher (France)
Co-Founder - Shaping Environmental Action

Jill Boughton (Philippines)
Co-founder
Waste2Worth

Dr. Arturo Castillo (UK)
Professor,
Imperial College

Enzo Favoino (Italy)
Researcher,
Scuola Agraria del Parco di Monza

Malati Gadgil (India)
Independent advisor and consultant.

Dr. Linda Godfrey (South Africa)
Principal Researcher, Council for Scientific and Industrial Research

Dr. Jutta Gutberlet (Canada)
Professor,
University of Victoria

Edward Kosior (UK)
Managing Director - Nextek

Crispian Lao (Philippines)
Founder and President
Philippine Alliance for Recycling and Material Sustainability

Daniela Lerario (Brazil)
CEO - Triciclos Brazil

Dr. Mao Da (China)
Chairman, Shenzhen Zero Waste; Director, Toxics-Free China

Ellie Moss (US)
Senior Advisor, Encourage Capital

Daniella Russo (US)
Co-founder and CEO - Think Beyond Plastic

Dr. Ussif Rashid Sumaila (Canada)
Professor,
University of British Columbia

Dr. Richard Thompson (UK)
Professor,
University of Plymouth

Dr. Costas Velis (UK)
Professor –
University of Leeds
(Co-Chair at ISWA)

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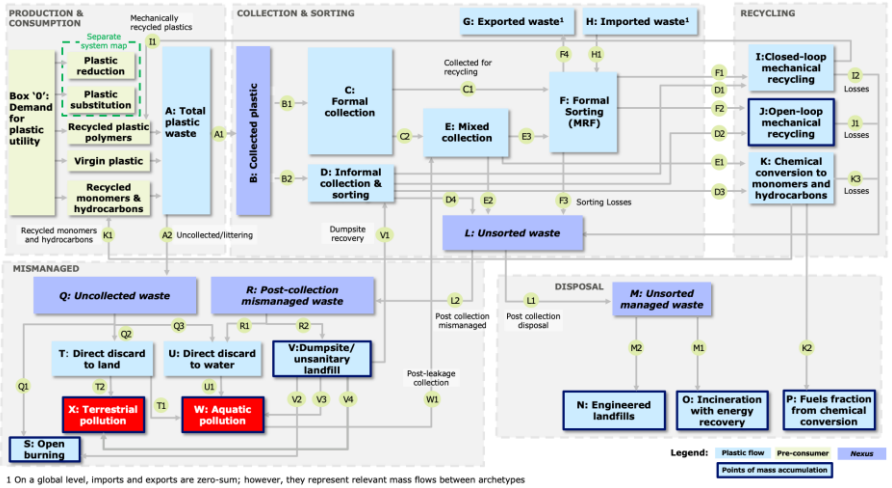
UNRECONCILED MITIGATION APPROACHES

1. BAN
2. BURN OR BURY
3. CLEAN UP
4. RECYCLE
5. BIO-SOLUTIONS

- HOW DO DIFFERENT STRATEGIES PERFORM ON ENVIRONMENTAL, ECONOMIC AND SOCIAL INDICATORS?
- HOW APPLICABLE ARE THEY TO MATERIALS AND GEOGRAPHIES?
- WHAT COSTS AND INVESTMENT ARE REQUIRED?

MODELLING SET-UP

Plastic System Stock/Flow



Plastic Types

Interventions

REDUCE

RECYCLE

SUBSTITUTE

DISPOSE

Geographical Archetypes

World Bank Country Income Level
X
Urban vs. Rural

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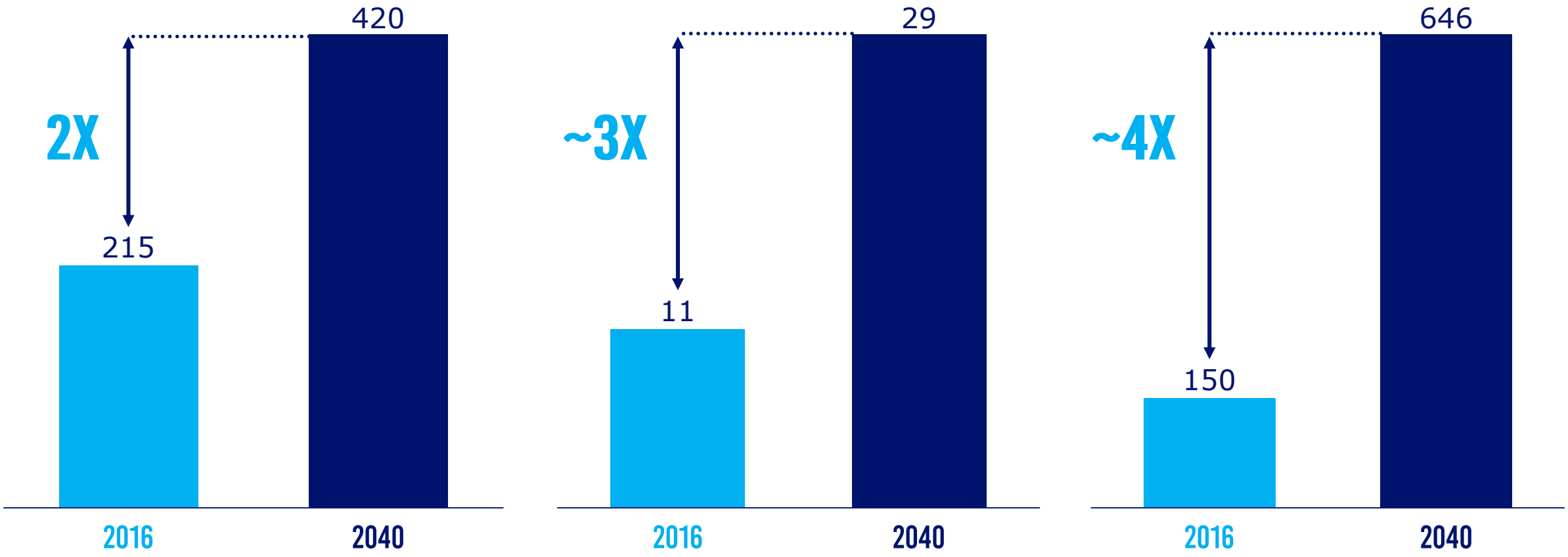
BUSINESS-AS-USUAL

MUNICIPAL SOLID WASTE PLASTIC



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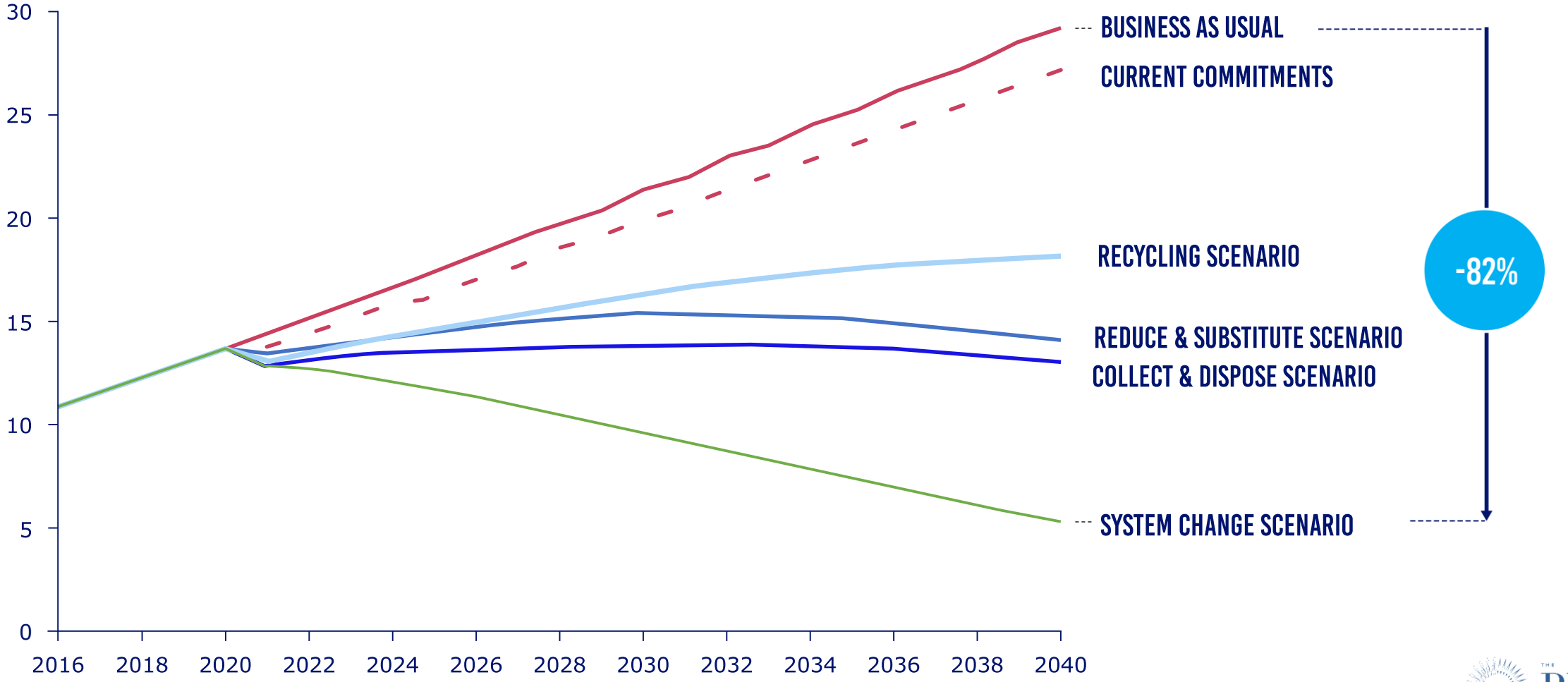
NO "SILVER BULLETS" BUT THERE IS HOPE

LEAKAGE TO THE OCEAN UNDER DIFFERENT SCENARIOS, MT PER YEAR



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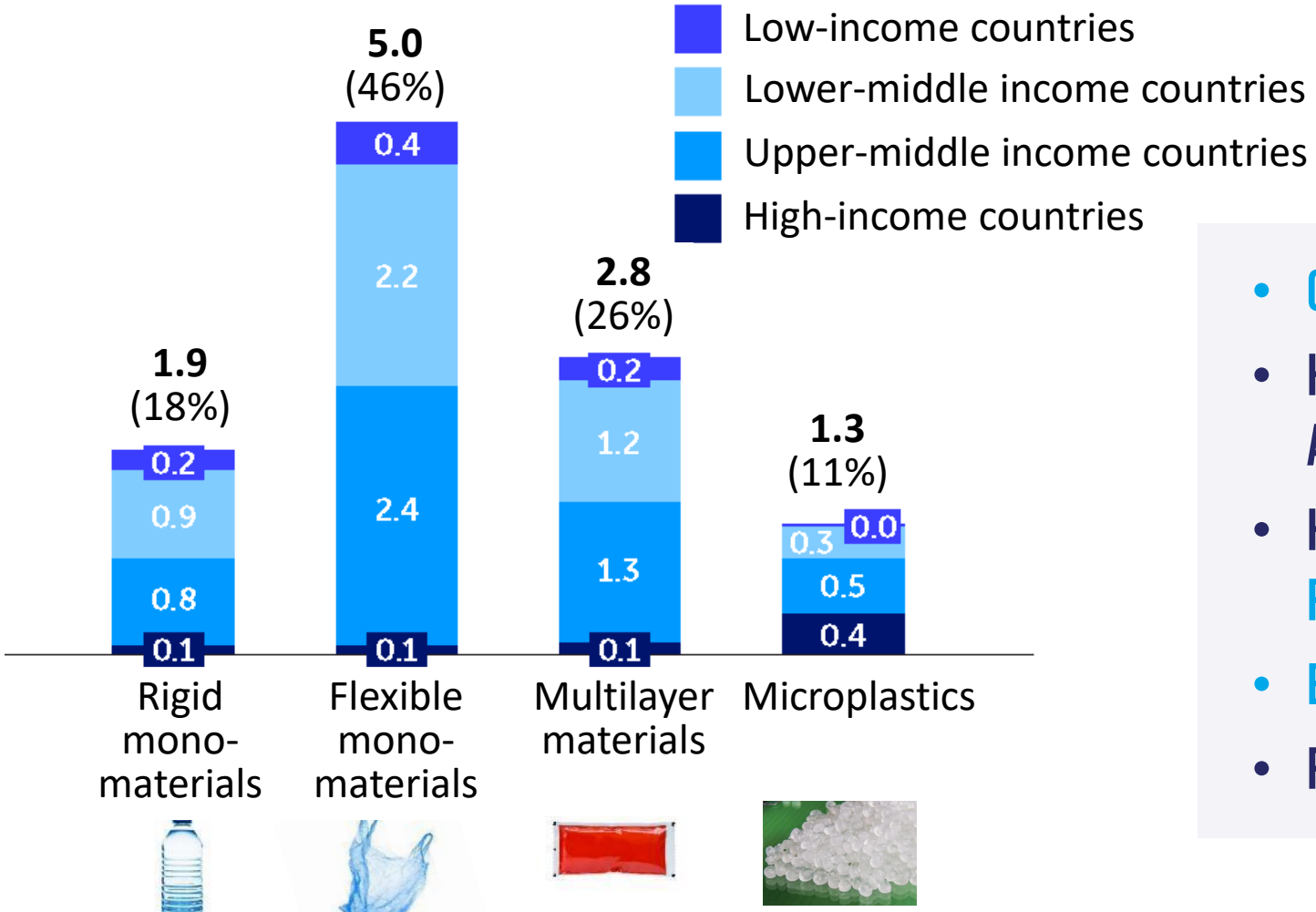
PLASTIC LEAKAGE BY GEOGRAPHY AND PLASTIC CATEGORY

PLASTIC LEAKAGE IN 2016, MT/YEAR



- GEOGRAPHIC DIFFERENCES IN LEAKAGE
- HIGH LEAKAGE OF FLEXIBLE MONOMATERIAL AND MULTILAYER MATERIALS
- HIGH-INCOME COUNTRY CONTRIBUTION TO PRODUCT DESIGN AND MATERIAL DEVELOPMENT
- EXPORT OF PLASTIC WASTE
- PER CAPITA MICROPLASTICS GENERATION

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COSTS OF SOLUTIONS

FULL VALUE CHAIN COST IN $/MT OF PLASTIC, 2040

- REDUCING WASTE GENERATION – CHEAPEST OPTION
- INNOVATIVE MATERIALS FOR SUBSTITUTION
- LOST MATERIAL VALUE IN DISPOSAL
- RECYCLING COSTS MIXED
- GHG EMISSIONS

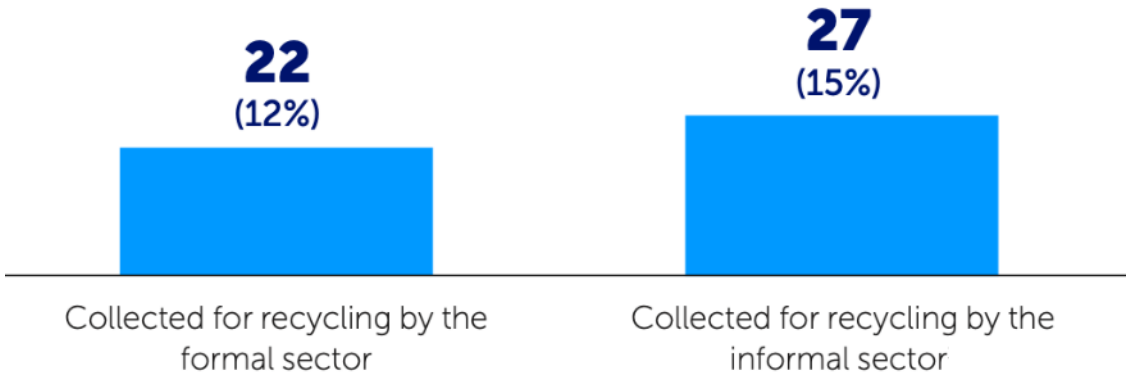
COSTS OF SOLUTIONS

FULL VALUE CHAIN COST IN $/MT OF PLASTIC, 2040

- REDUCING WASTE GENERATION – CHEAPEST OPTION
- INNOVATIVE MATERIALS FOR SUBSTITUTION
- LOST MATERIAL VALUE IN DISPOSAL
- RECYCLING COSTS MIXED
- GHG EMISSIONS

GLOBAL COLLECTION A BOTTLENECK

2016 WASTE COLLECTION FOR RECYCLING, MT



- 15% OF PLASTIC IS RECYCLED GLOBALLY
- 2 BILLION PEOPLE WITHOUT WASTE MANAGEMENT
- WASTE IS COLLECTED FOR ITS VALUE
- INCREASE USE OF RECYCLED CONTENT
- COMPANIES INNOVATE PRODUCT REDESIGN AND DESIGN FOR RECYCLING
- ROLE OF DESIGN AND LABELLING STANDARDS

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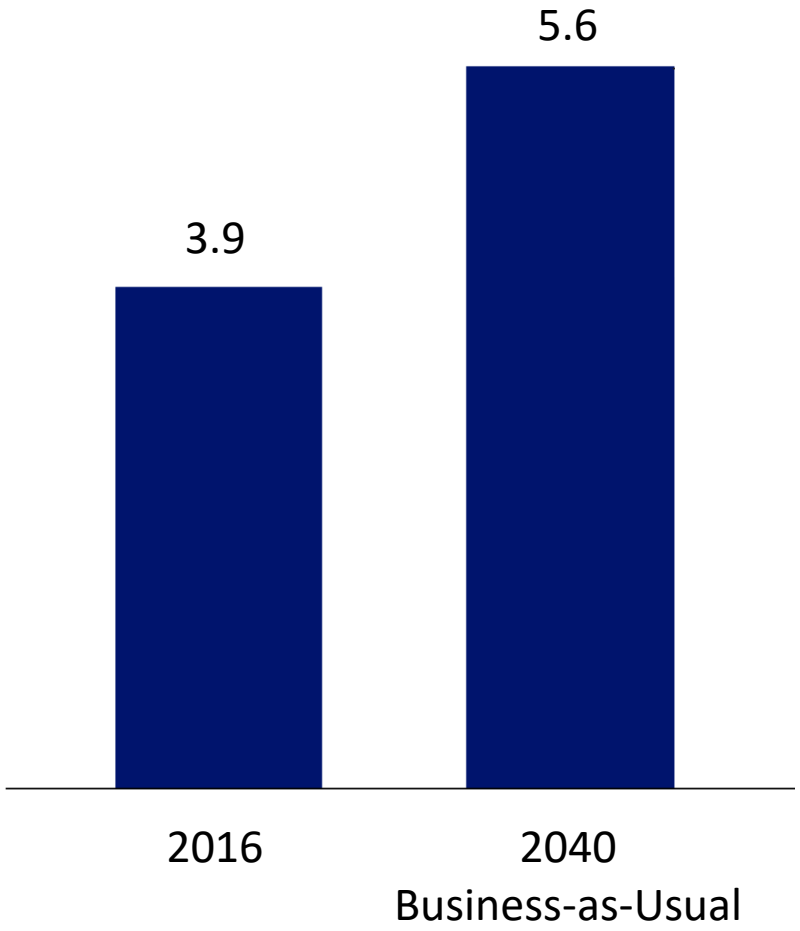
PLASTIC WASTE EXPORT TO MIDDLE/LOW-INCOME COUNTRIES

MILLION METRIC TONS OF PLASTIC EXPORTED PER YEAR



- 5-20% UNRECYCLABLE
- TRACKING OF EXPORTED PLASTIC WASTE
- COMPOSITION OF EXPORTED PLASTIC WASTE
- FATE OF EXPORTED PLASTIC WASTE
- POTENTIAL DISPLACEMENT OF RECEIVING COUNTRY'S CAPACITY FOR DOMESTIC WASTE

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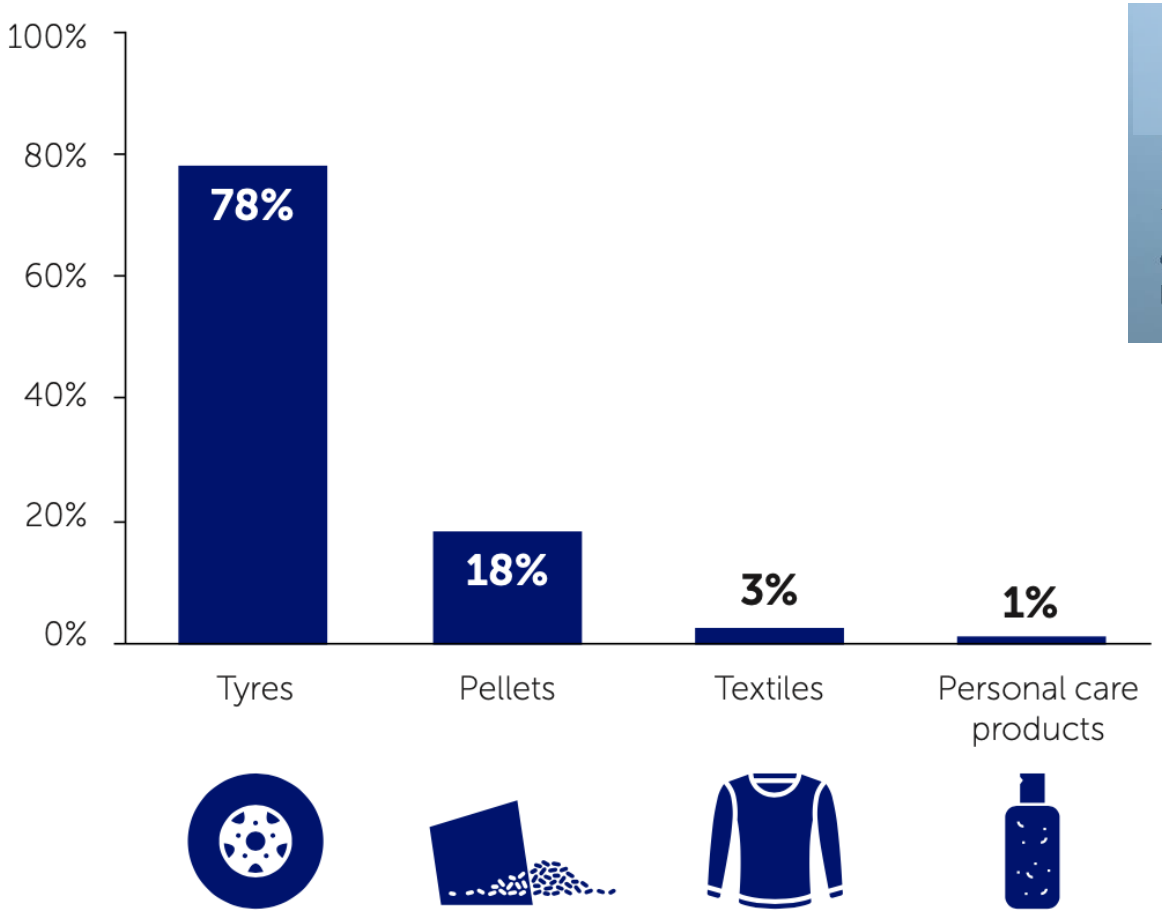
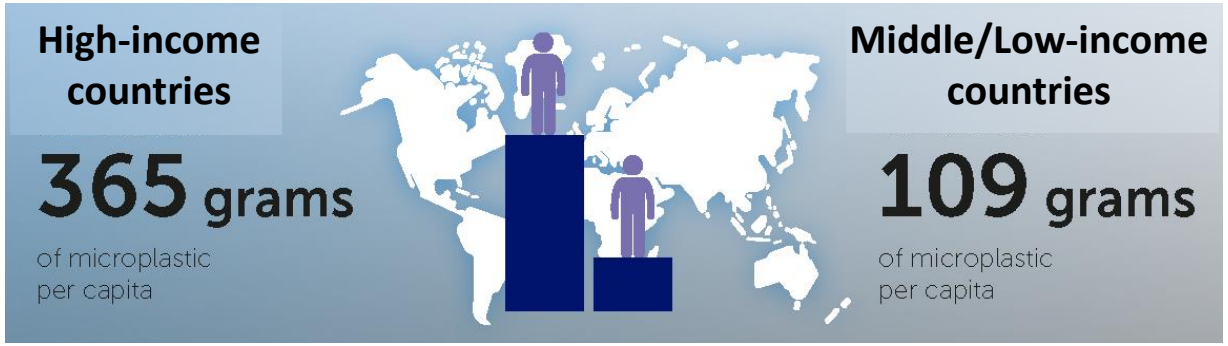
HIGH-INCOME COUNTRIES AND PRIMARY MICROPLASTICS

MICROPLASTIC EMISSIONS BY SOURCE, 2016





- MICROPLASTICS INCREASING
- DISPROPORTIONATE PLASTIC POLLUTION IN HIGH-INCOME COUNTRIES
- TIRES REMAIN UNSOLVED
- SOLUTION AT THE SOURCE

THE PEW CHARITABLE TRUSTS

Breaking the Plastic Wave
Report

Science
Manuscript

Winnie Lau
wlau@pewtrusts.org

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Photo: Justin Hoffman