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The rapid rise of plastics

A world without plastics seems unimaginable today, yet their large-scale production and use only dates back to around 1950.

How heavy is 8.3 billion metric tons?

822,000 X
THE EIFFEL TOWER
(10,100 metric tons)



25,000 X
EMPIRE STATE
BUILDING
(331,000
metric tons)



80 MILLION X
BLUE WHALE
(104.5
metric tons)



1 BILLION X
ELEPHANTS
(7.5 metric
tons)



GLOBAL PLASTIC PRODUCTION ESTIMATES

1950 | **2M** METRIC TONS | 2017 | **8.3B** METRIC TONS | 2050 | **34B** PROJECTED METRIC TONS



Plastic waste can be recycled, incinerated or discarded where it accumulates in landfills.

 **9%**
Recycled

 **12%**
Incinerated

 **79%**
Accumulated in
landfills



*Geyer, Jambeck and Law,
Science Advances, 2017*

TOTAL PLASTIC WASTE

2015 → **6.3B** METRIC TONS

2050 → **12B** PROJECTED METRIC TONS



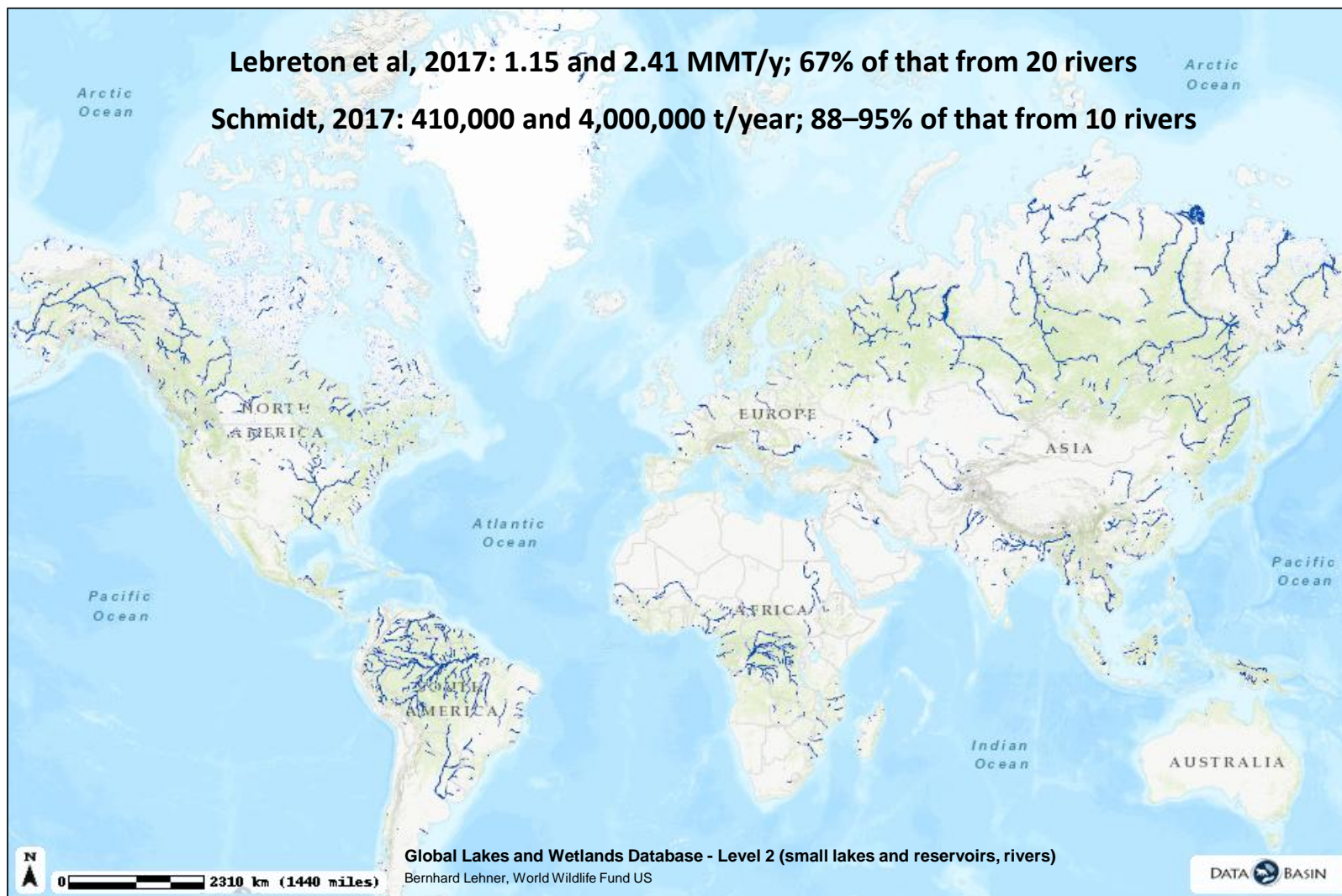
Lebreton et al, 2017: 1.15 and 2.41 MMT/y; 67% of that from 20 rivers

Schmidt, 2017: 410,000 and 4,000,000 t/year; 88–95% of that from 10 rivers

Global Lakes and Wetlands Database - Level 2 (small lakes and reservoirs, rivers)

Displaying: TYPE

- Lake
- Reservoir
- River

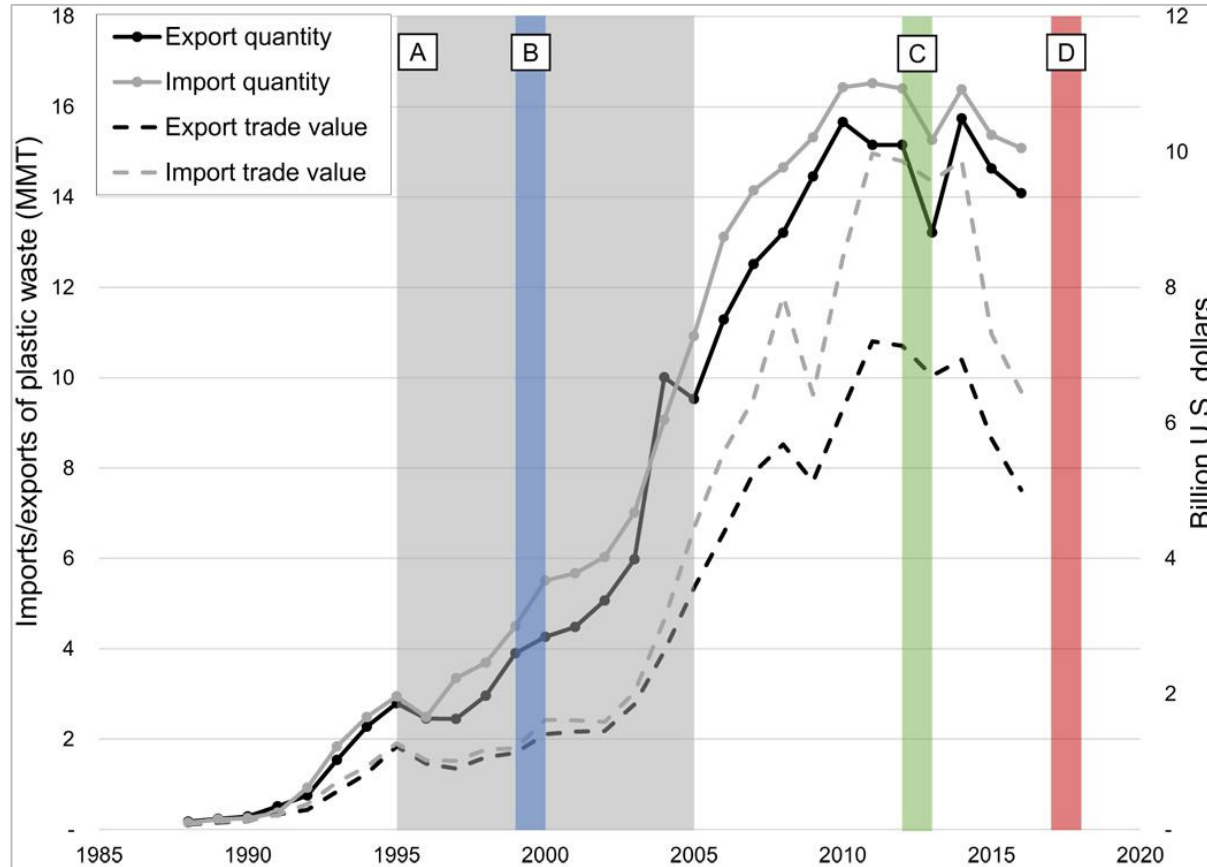


Global Lakes and Wetlands Database - Level 2 (small lakes and reservoirs, rivers)

Bernhard Lehner, World Wildlife Fund US

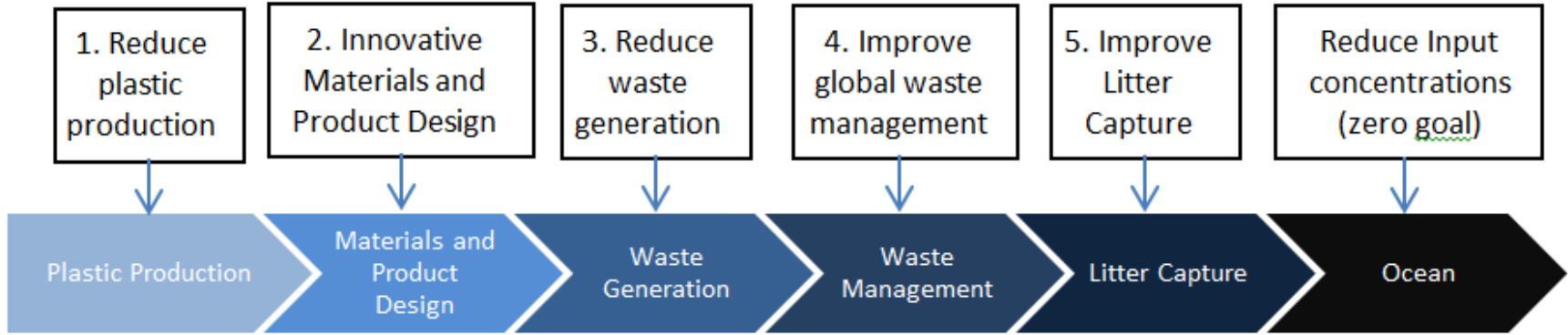
DATA BASIN

Import-Export of Plastic Waste for Recycling





Intervention Framework



1. Industry-led or reduce demand
2. Green Engineering, Circular Economy
3. Reusable items, Sharing/Collaborative Economy
4. Context-sensitive Solid Waste management Infrastructure
5. Litter Capture and Clean-up

1. Consumer Choice (luxury) - Reduce Demand

- Advocate for the change you want to see
- Use less disposable (e.g., plastic) items
 - Reusable water bottles
 - Reusable bags
 - Reusable straws (stainless steel or glass)
 - Reusable picnic materials
 - Choose products with less plastic packaging
 - Choose products without microbeads



1 & 3. Meet needs – Reduce waste



**200+ self-serve
drink systems
installed worldwide.
Innovating & improving
with every location.**

Our Self-Serve Technology creates a fun, engaging environment for your patrons.

400% more efficient than any other method of dispense. Combined with **no waste** and a lower cost of goods leads to **higher profits** for your business. This is the **rise of self serve beer**.

[Learn more >](#)

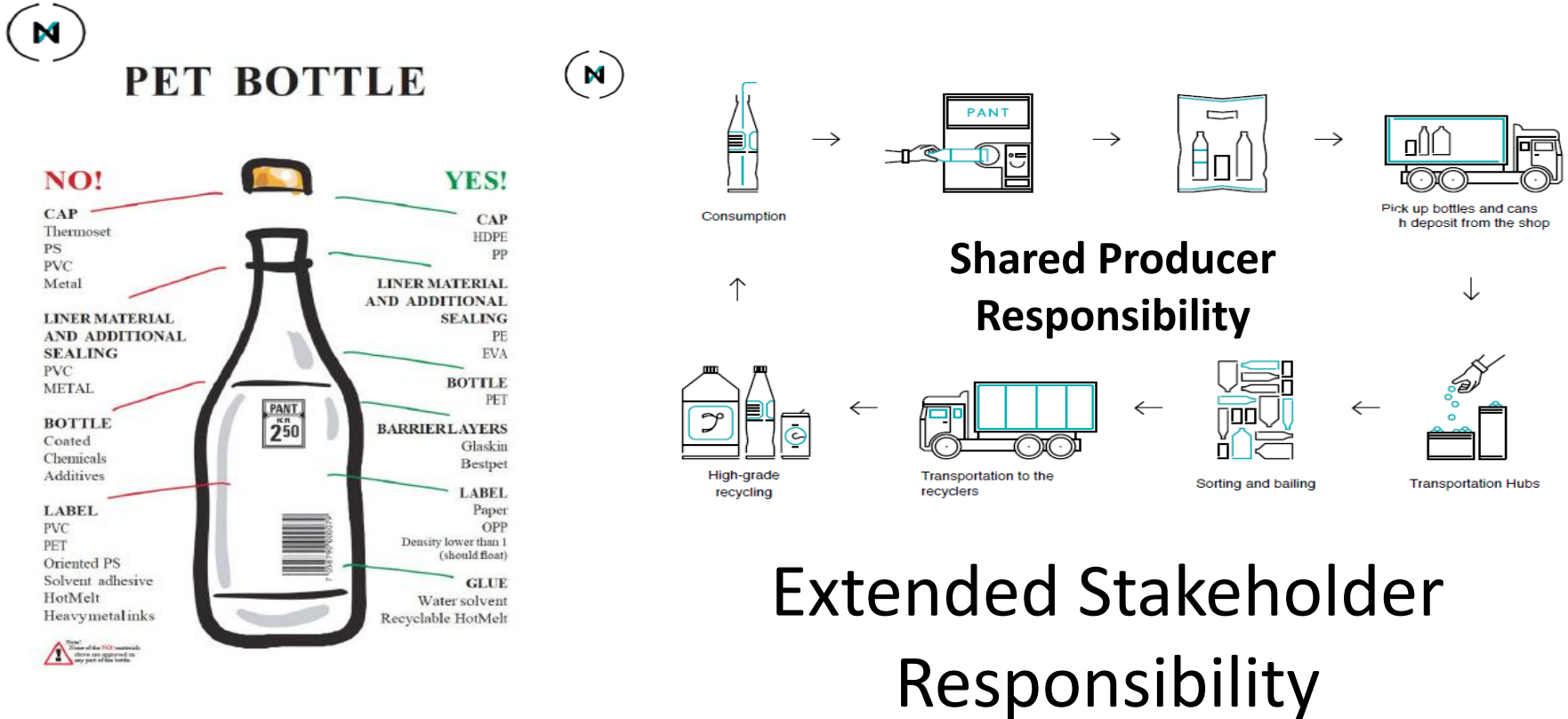
Featured on



CNNMoney



2. Consider End-of-Life at Design Stage

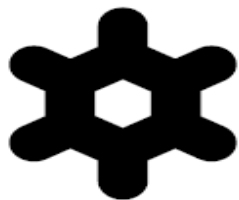


2.



THE UNIVERSITY OF GEORGIA

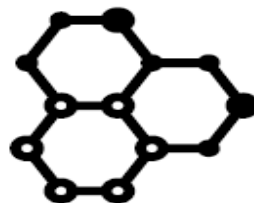
New Materials Institute



**Advanced
Fiber + Coating
Technologies**



**Circular
Materials
Management**



**Novel
Biodegradable
Polymers +
Additives**



4. Improve Waste Management Infrastructure Globally

- Collect



- Capture



- Contain



Context & Culture



Price List

Item	Price
1. Plastic Bottle	100
2. Glass Bottle	150
3. Metal Can	200
4. Paper Box	120
5. Plastic Bag	50
6. Metal Sheet	100
7. Plastic Sheet	80
8. Metal Pipe	150
9. Plastic Pipe	100
10. Metal Wire	120
11. Plastic Wire	80
12. Metal Nail	50
13. Plastic Nail	30
14. Metal Bolt	100
15. Plastic Bolt	50
16. Metal Nut	80
17. Plastic Nut	40
18. Metal Washer	60
19. Plastic Washer	30
20. Metal Bracket	100
21. Plastic Bracket	50
22. Metal Hinge	120
23. Plastic Hinge	60
24. Metal Lock	150
25. Plastic Lock	80
26. Metal Key	100
27. Plastic Key	50
28. Metal Chain	120
29. Plastic Chain	60
30. Metal Ring	100
31. Plastic Ring	50
32. Metal Chain Link	120
33. Plastic Chain Link	60
34. Metal Ring Link	100
35. Plastic Ring Link	50





5. Last Chance Capture...

(but need infrastructure to manage & should capture data for upstream solutions)





saunie @saunieindiego · Feb 11
@Care4Ocean @DebrisTracker Thousands of miles away, same kinds of plastic litter.



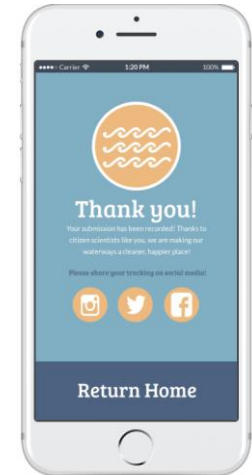


Marine Debris Tracker

Tool for Data Collection

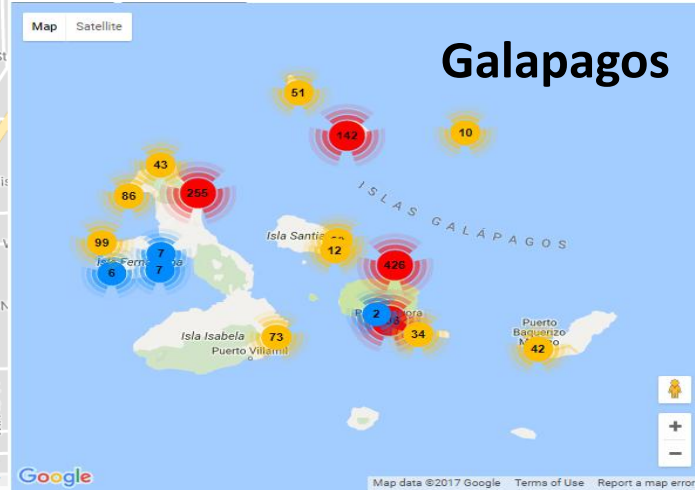
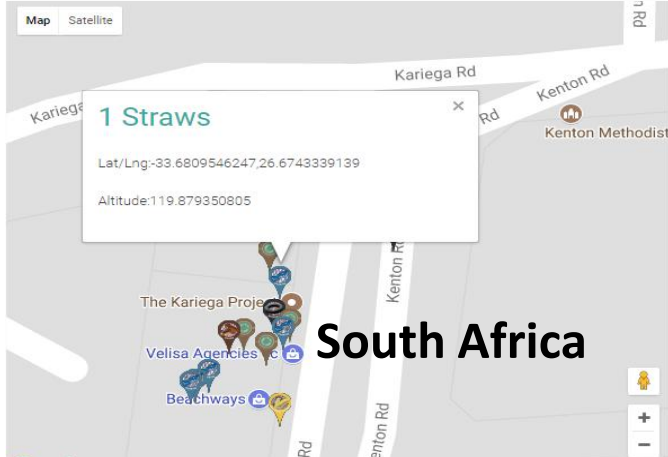
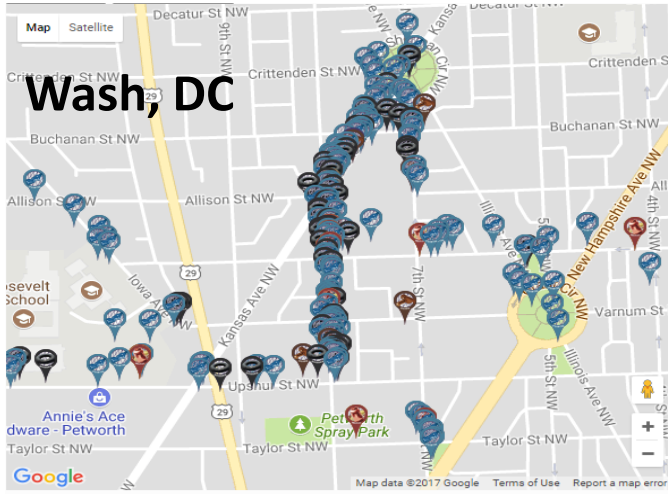


- Less error without paper & pen
- GPS coordinate for every debris item
- Near real time data gathering/upload
- Easy download (Excel) and mapping
- Used by researchers, citizens or citizen scientists



Website: <http://www.marinedebris.engr.uga.edu/>

Data to Inform Solutions (Marine Debris Tracker: 1.5 million items)

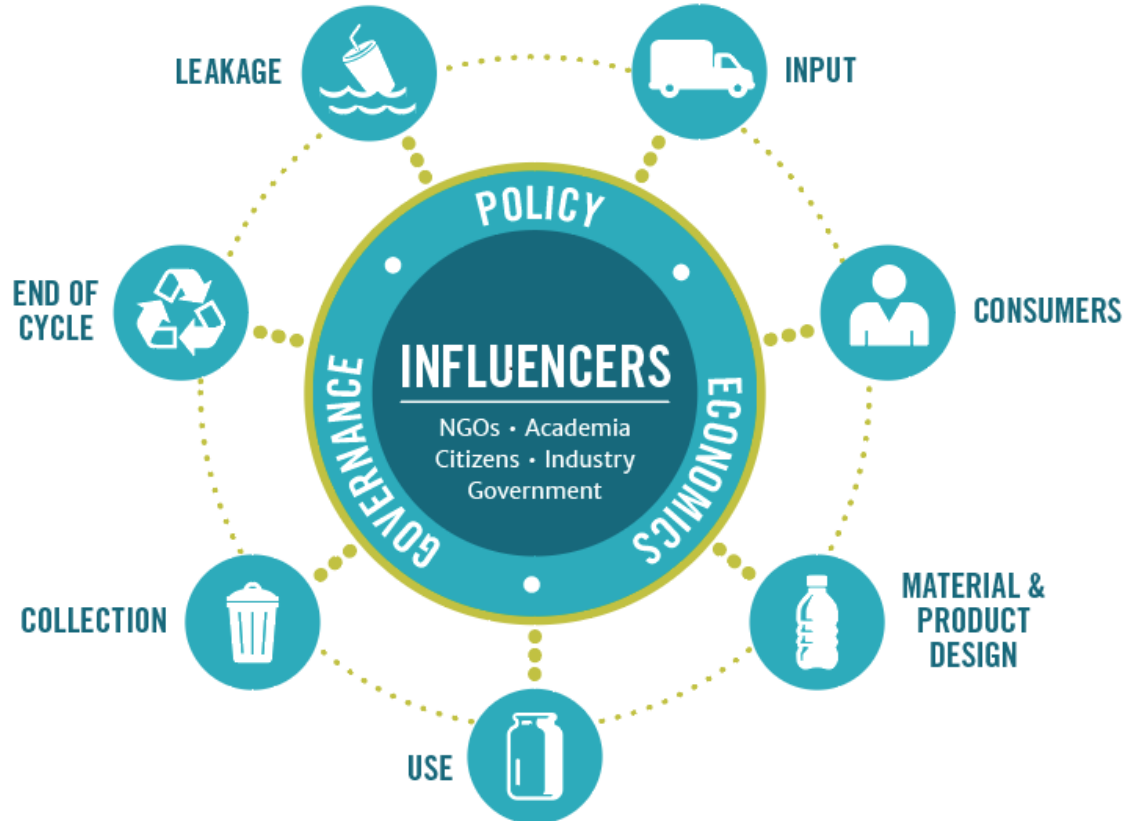




- **US State Dept. (SOS Act) IISP Program:** Chile, Philippines, Indonesia, Japan, South Africa, Vietnam, Thailand, Israel, Jordan, South Korea, India, **USAID**
- **World Bank, G7 (declarations, plastics charter), G20, APEC (+OC), NGOs, Volvo Ocean Race, NatGeo**
- **UN Environment – UNEA2,3, Clean Seas, Conventions (Abidjan, Nairobi), Our Ocean**
- **Other Countries/Bilateral:** Denmark, Norway, UK, Canada, Germany, *and more...*
- **Prizes:** EMF Design Competition, Think Beyond Plastic Innovation Prize, NatGeo Innovation prize
- **Global Investment Strategies:** Moss, E., Eidson, A., and Jambeck J., 2017. **Sea of Opportunity: Supply Chain Investment Opportunities to Address Marine Plastic Pollution, Circulate Capital**

Center for Circular Materials Management

Global to Local





To all of the people working to address this issue around the world...
Thank You.

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@DebrisTracker
@UGANewMaterials

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