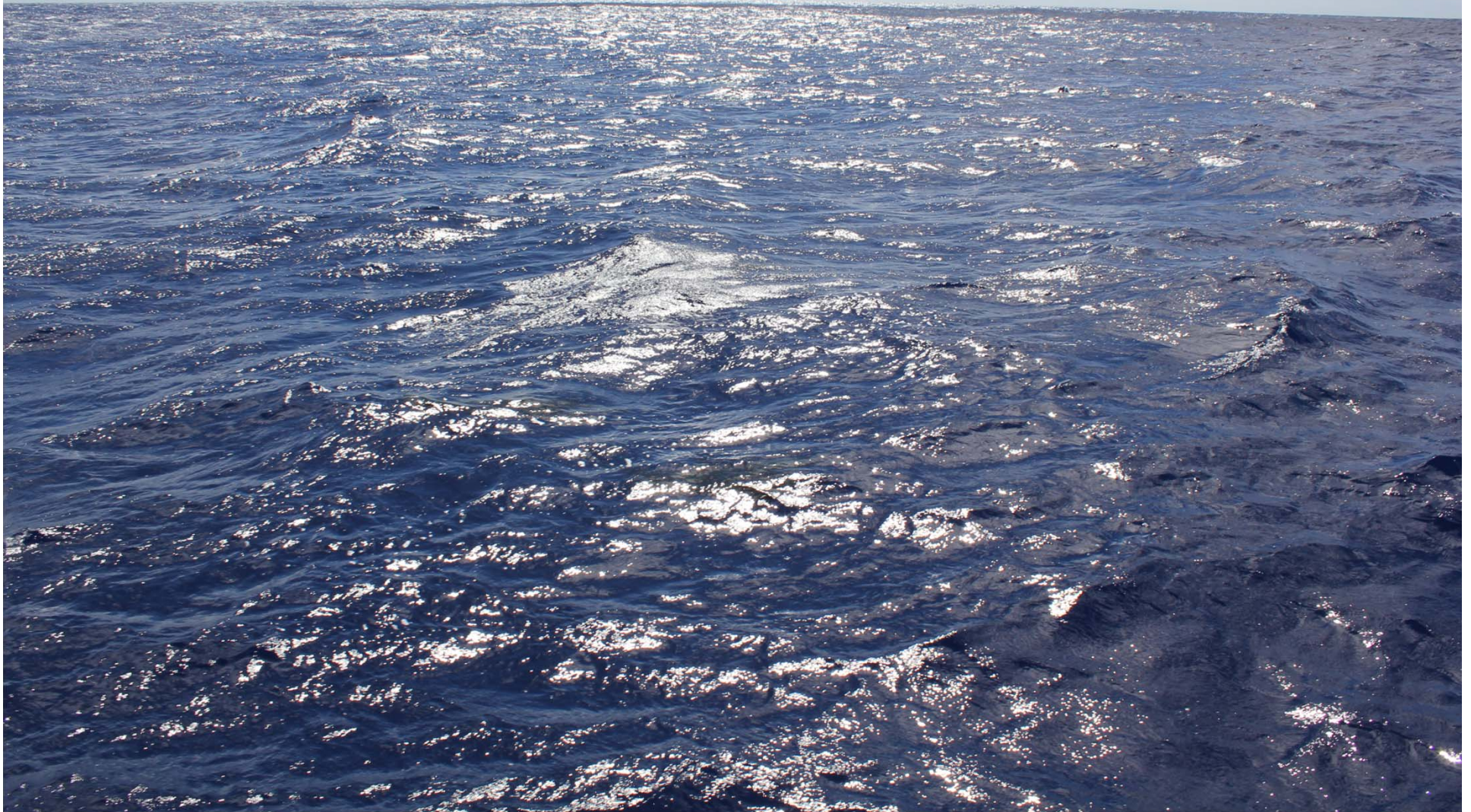


Plastic Waste Input Into the Ocean: Science and Solutions



New Materials Institute
UNIVERSITY OF GEORGIA

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Director of Center for Circular Materials Management, University of Georgia
National Geographic Explorer





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



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

9%
Recycled

12%
Incinerated

79%
Accumulated in
landfills

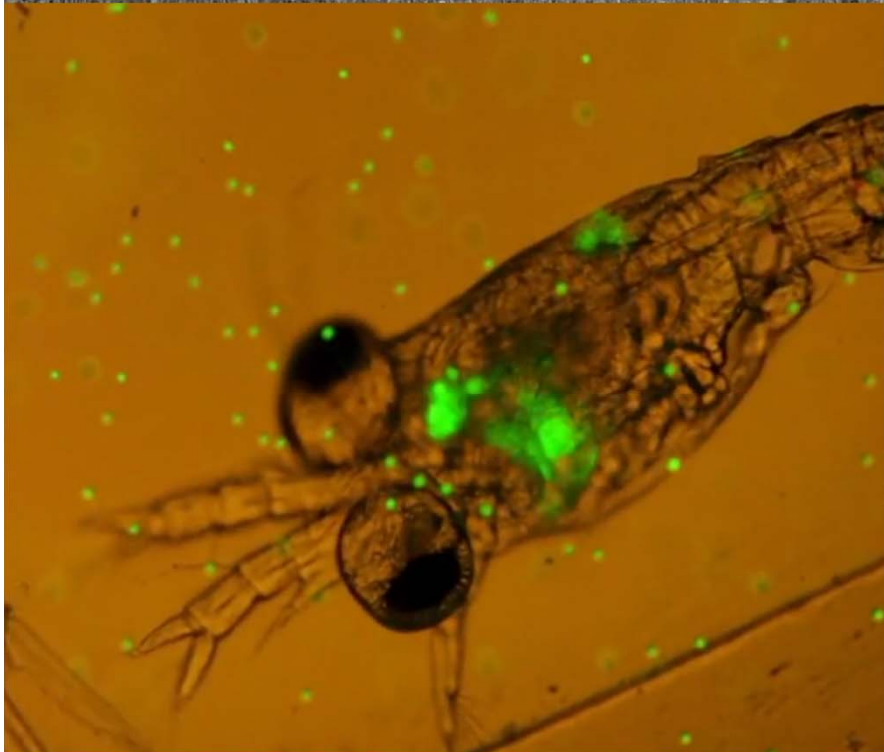
TOTAL PLASTIC WASTE

2015 → 6.3B METRIC TONS

2050

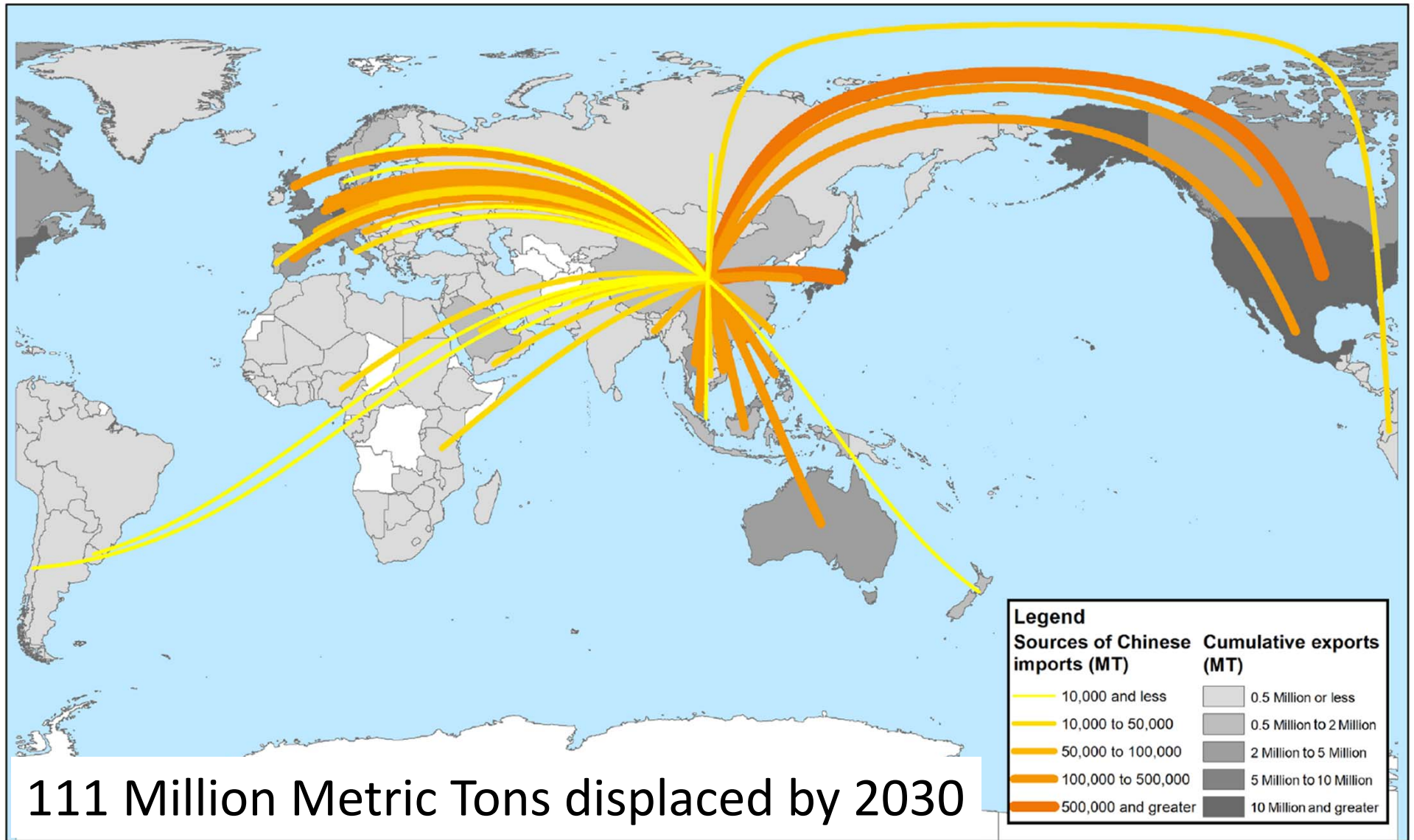
12B PROJECTED METRIC TONS

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





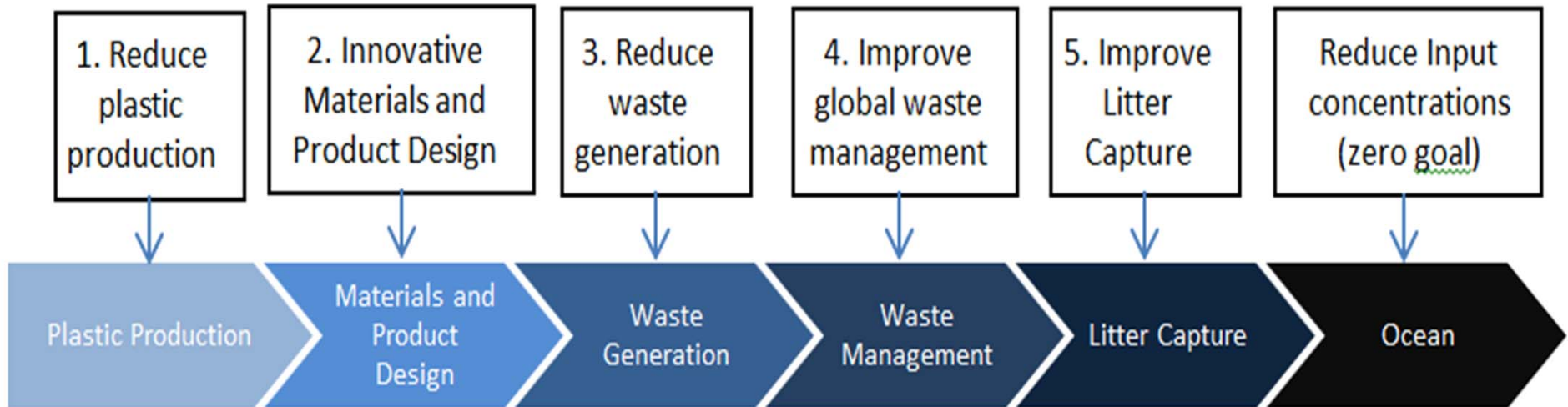
Import and Export of Plastic “Waste”





Intervention Framework

(Community of Action Commitments can fit in here)



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. Collaborative, Sharing Economies



Ride

FREE Shipping over \$99 and Easy Returns [details](#)

THREDUP

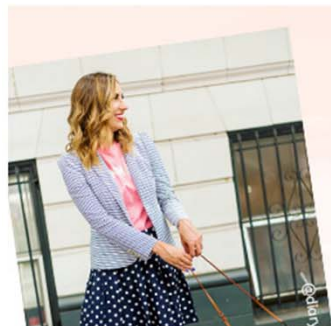
Secondhand Clothes. Firsthand Fun.®

[WOMEN](#) [KIDS](#) [BLOG](#) [CLEAN OUT](#)

Women ▾

[Goody Boxes](#) | [Clothing](#) [Premium](#) [Designer](#) [Maternity](#) [Plus](#) [Juniors](#) [Shoes](#)

THE LARGEST ONLINE CONSIGNMENT



CELEBRATE OUR B-DAY WITH

Polka Dot Print

Our signature pattern is on trend for our birthday, and it's up to 90% off

I do not need a drill.
I need a hole in the wall



<http://www.cruxcatalyst.com/wp-content/uploads/drill-hole.jpg>



[ABOUT](#) [MEMBERSHIP](#) [INVENTORY](#) [3D PRINTS & LASER CUTTING](#) [YOUTH](#) [WORKSHOPS](#) [MEDIA](#) [DONATE](#)



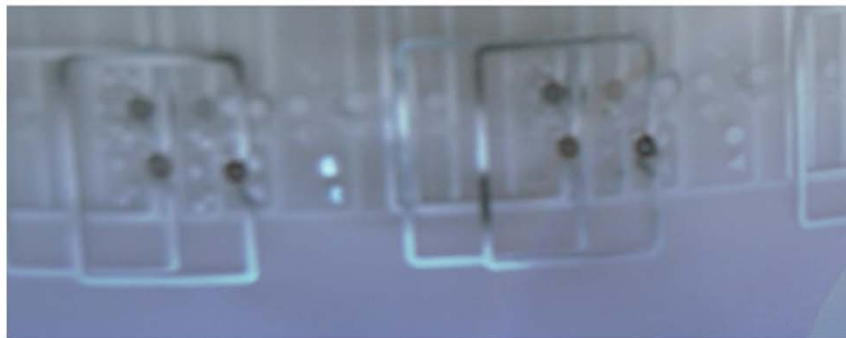
EASY UPCYCLING PROJECTS FOR KIDS

TTL Kids! happily situates itself in The Maker Movement, which can be broadly defined as a collective of people around the world who are employing do-it-yourself or do-it-with-others techniques to develop unique products and devices. Tinkering, coding, building, creating and innovating - together. This movement rests on makers making their designs open-source and available for anyone to reproduce off Internet sites such as Instructables or Thingiverse. We believe that getting kids involved in areas that teach the skills and thought processes...

1 & 3. Apply these concepts to packaging



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pour
MY BEER

OUR SELF-SERVE BEER SYSTEM ABOUT



**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



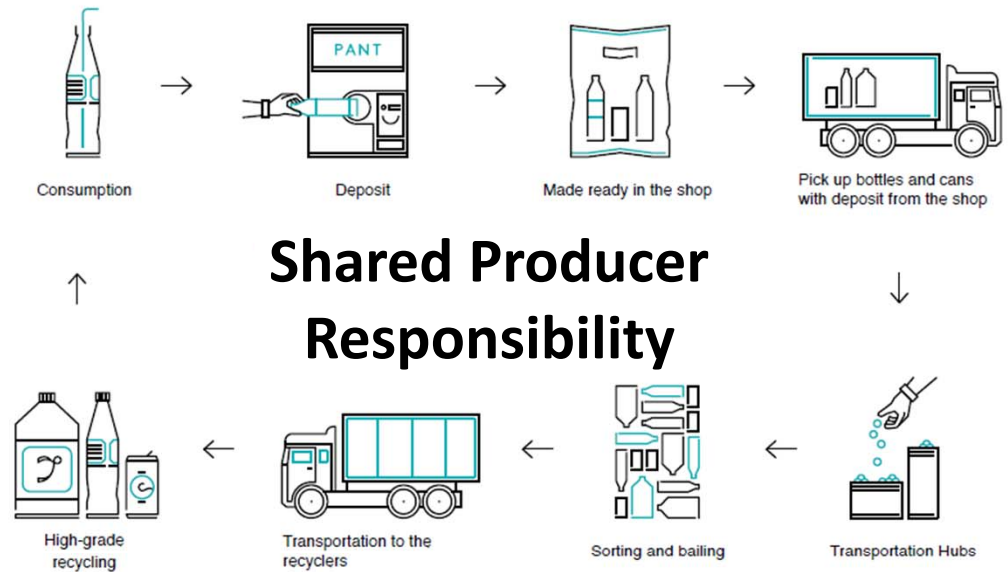
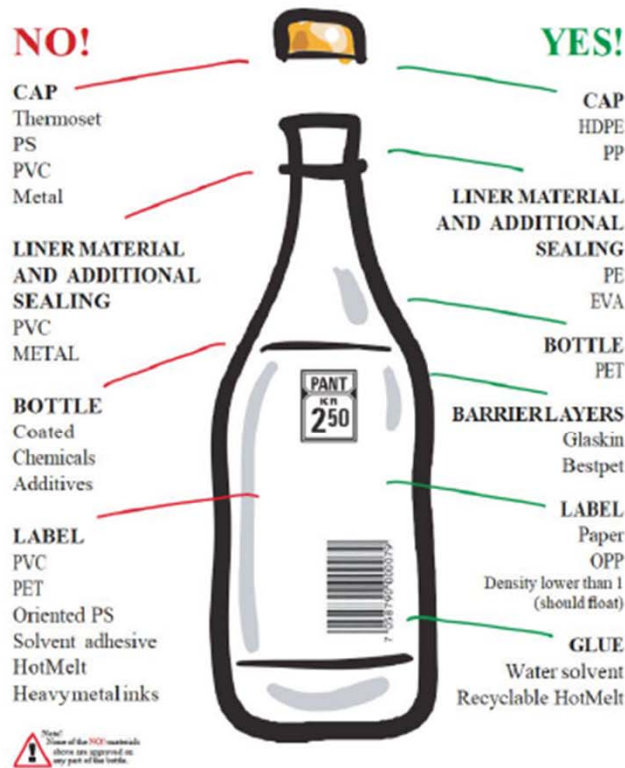
CNNMoney



2. Consider End-of-Life at Design Stage



PET BOTTLE



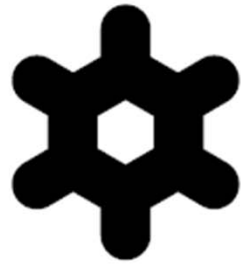
Extended Stakeholder Responsibility

2.



THE UNIVERSITY OF GEORGIA

New Materials Institute



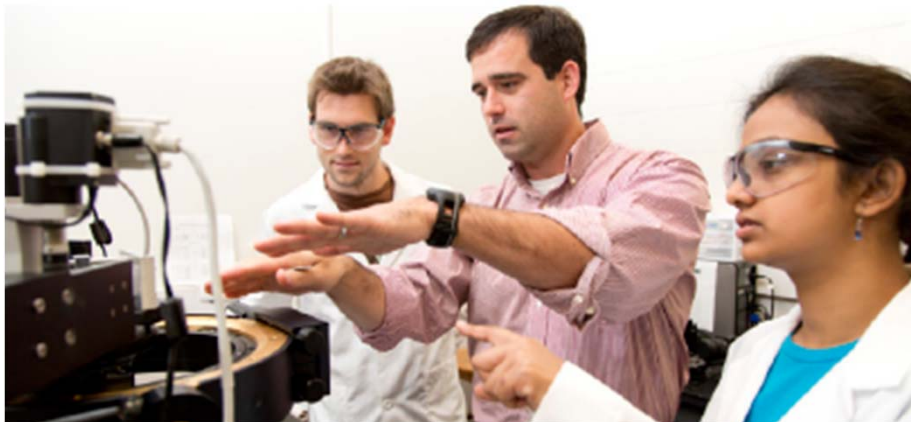
Advanced
Fiber + Coating
Technologies



Circular
Materials
Management



Novel
Biodegradable
Polymers +
Additives



4. Improve Waste Management Infrastructure Globally

- Collect



- Capture



- Contain



Context & Culture







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.



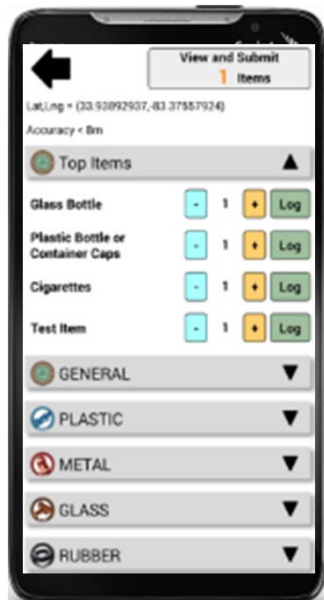
2 1



Marine Debris Tracker

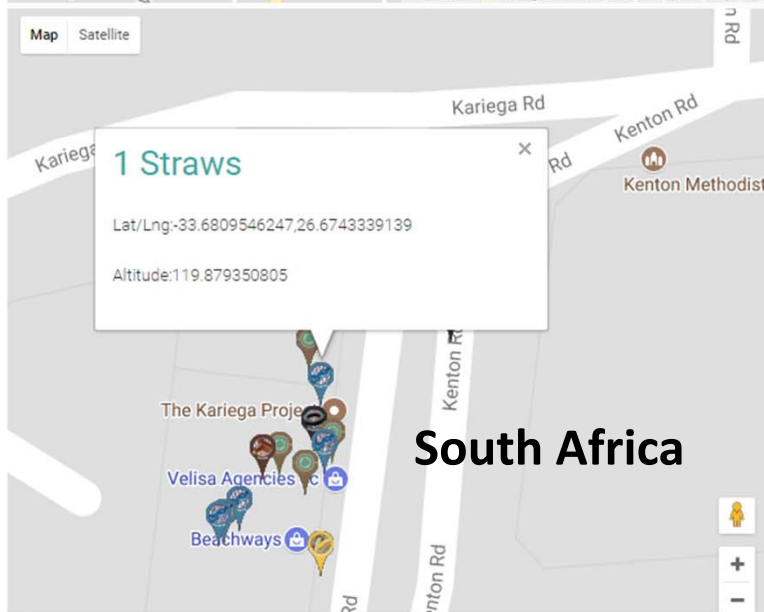
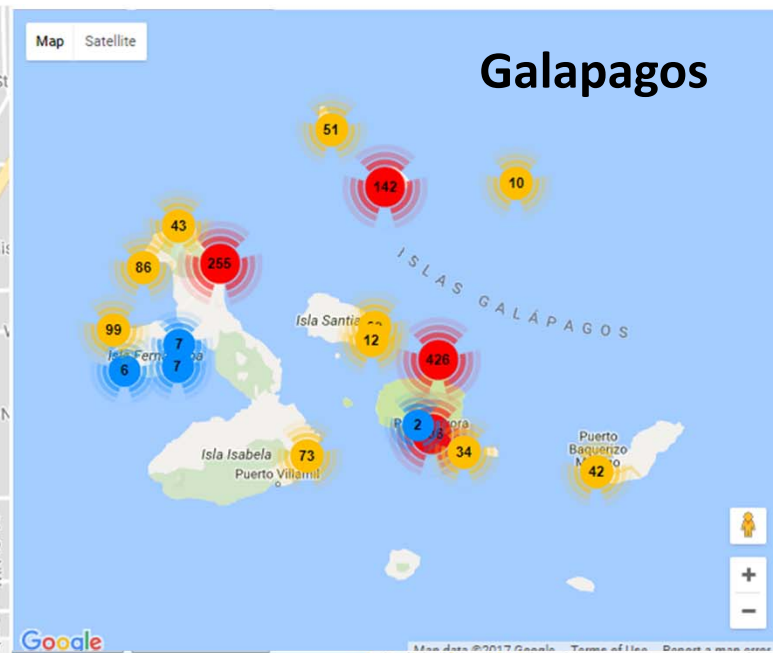
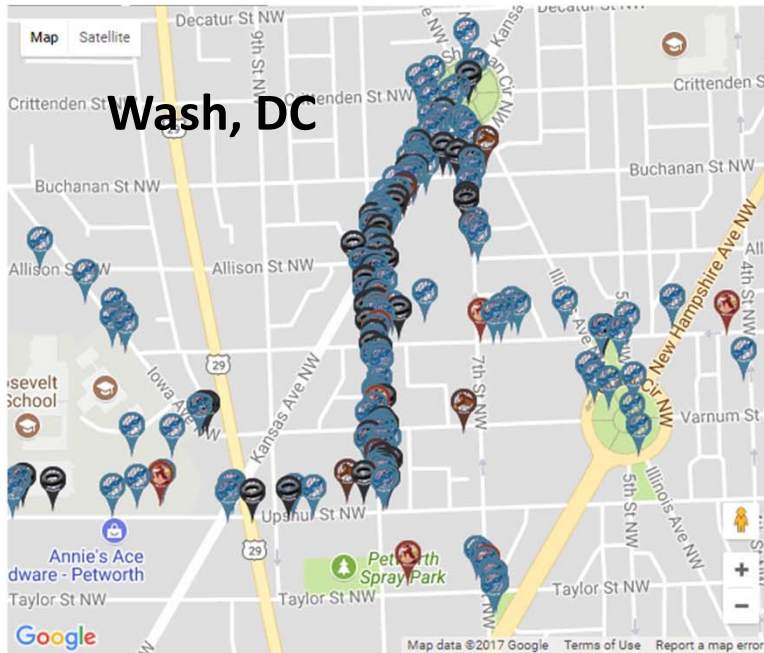
Tool for Data Collection

- 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



National Geographic Explorer Vietnam Partner





MARINE LITTER NETWORK
Powered by the Global Partnership on Marine Litter

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[POLICY AND ACTION](#) ▾

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Welcome to the new Marine Litter Network

Hosted by the Global Partnership on Marine Litter, this is the place for information on marine litter worldwide. Visit the site for recent news, [global projects](#), [action plans](#), [resources](#), and [events](#). Then [join us in the network](#)!

What's Happening? Marine Litter in the News.

- [Diver posts video showing current of plastic in Indonesian ocean](#)
Source: [Marine Debris](#) | Published on 2018-03-07
- [Northcoast Environmental Center celebrates volunteers who help keep coastlines clean](#)

Source: [Marine Debris](#) | Published on 2018-03-06

Join the [#marinelitter](#)
[#marinedebris](#)
conversation.

Tweets



Global Outreach, Public Diplomacy, Policy



- **US State Dept. (SOS Act):** Chile, Philippines, Indonesia, Japan, South Africa, Vietnam, Thailand, Israel, Jordan, South Korea, India
- **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,**



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

@JambeckResearch
@DebrisTracker
@UGANewMaterials

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<http://jambeck.engr.uga.edu/>



New Materials Institute
UNIVERSITY OF GEORGIA



11TH HOUR RACING

