

Plastic Pollution & Citizen Science

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WHY DO WE NEED TO MONITOR PLASTIC POLLUTION?

We cannot manage what we do not measure

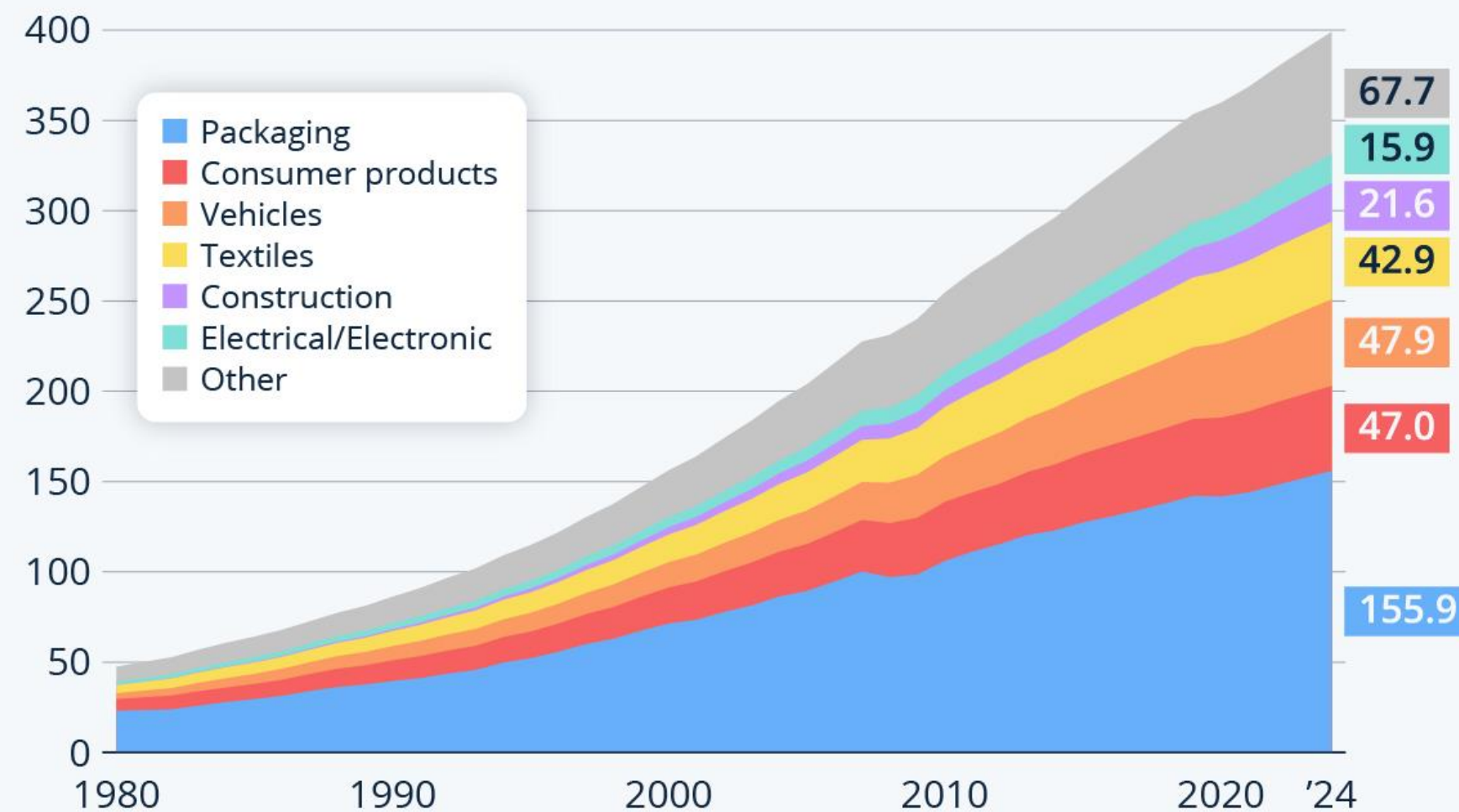
Monitoring helps us:

- Identify pollution sources
- Understand spatial and temporal patterns
- Evaluate environmental policies
- Support conservation actions



The World Is Flooded With Plastic Waste

Global plastic waste production
by application (in million tonnes)*



* Forecast from 2020 onwards

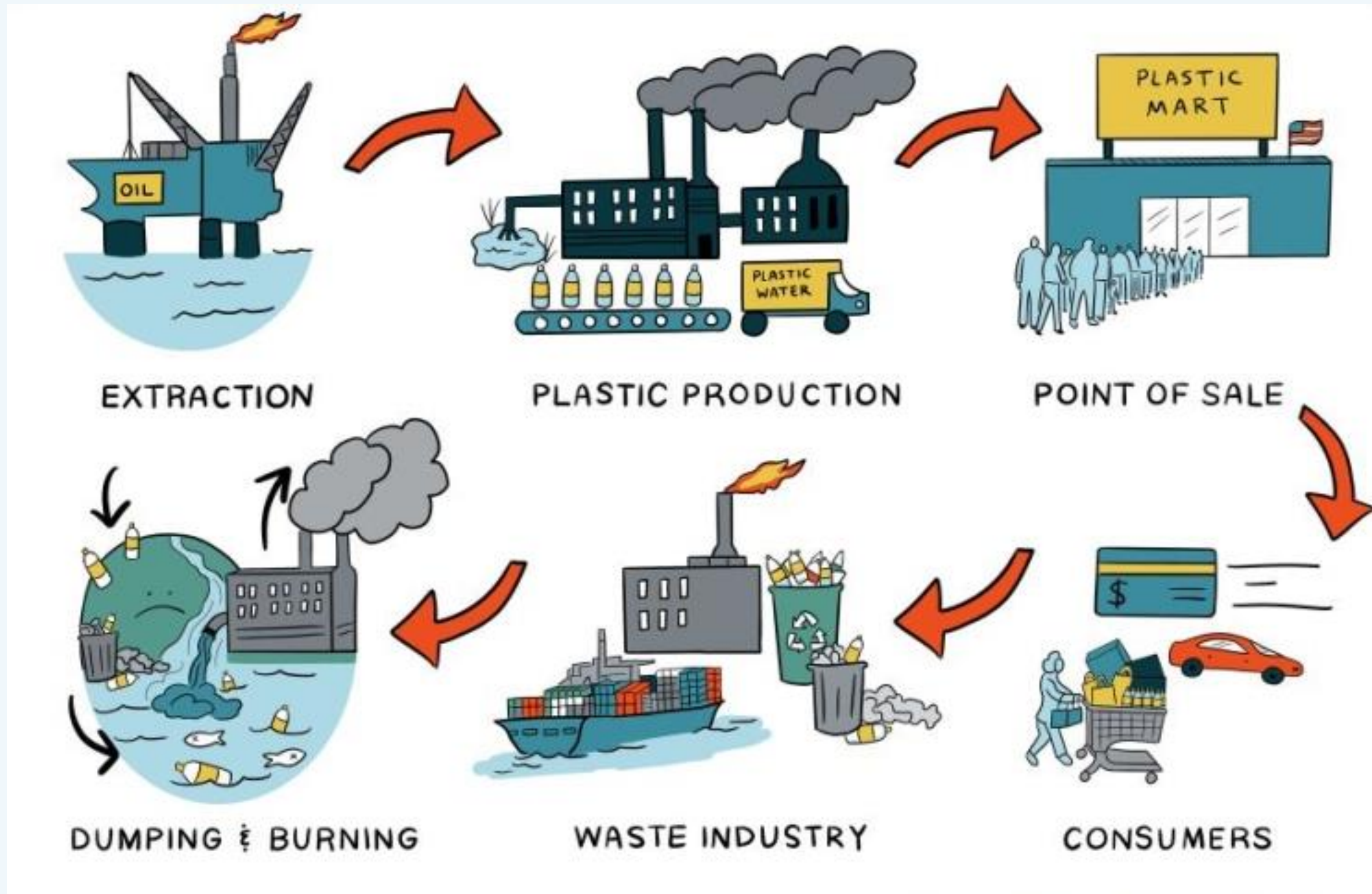
Source: OECD



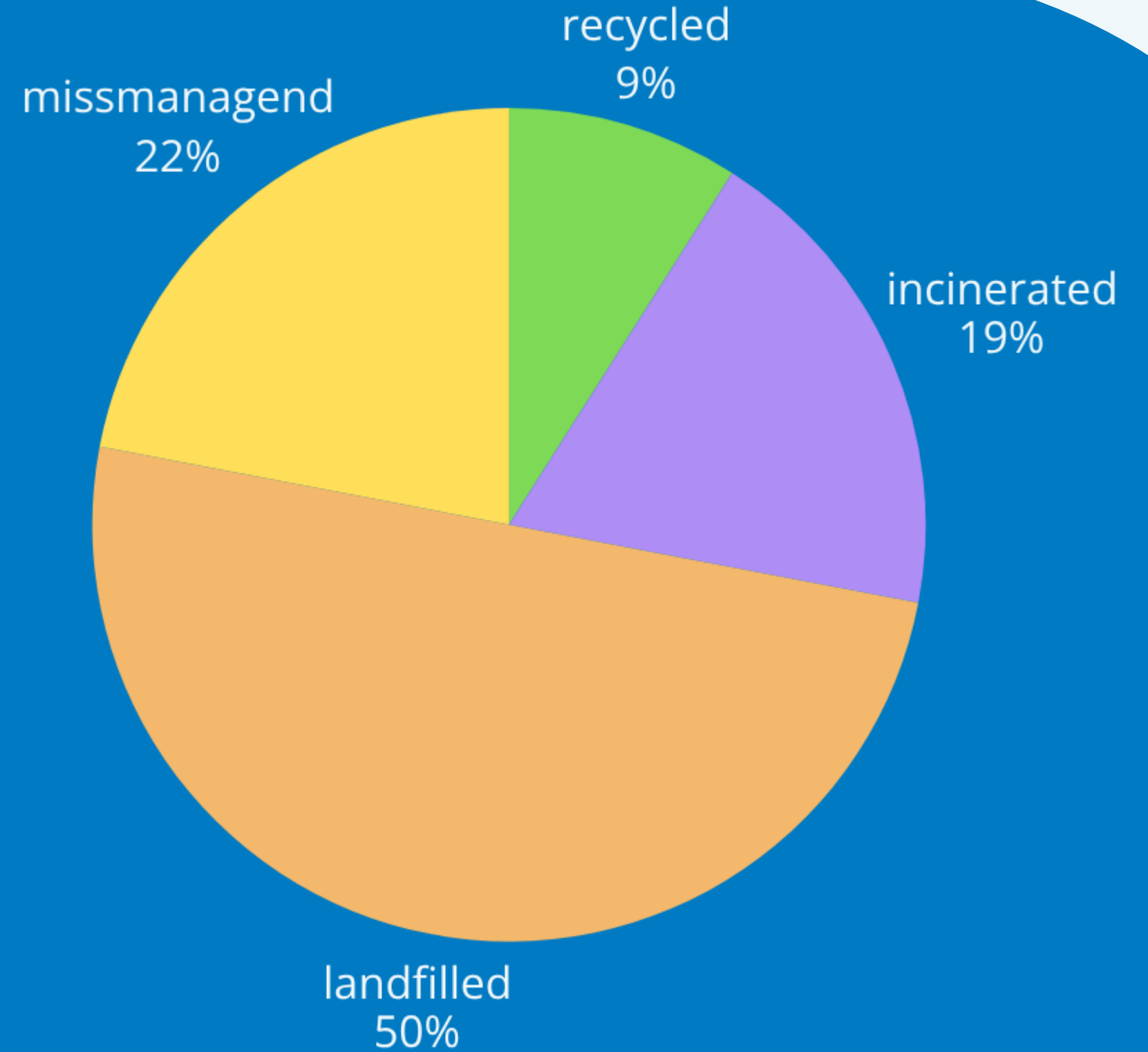
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- Around 400 million tonnes of plastic are produced annually
- Rapid increase since the 1950s
- Large amounts enter terrestrial and aquatic environments

The plastic lifecycle



WHERE DOES PLASTIC WASTE GO?



HOW DOES PLASTIC REACH THE OCEAN?

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MACROPLASTICS: THE VISIBLE PROBLEM

What does the prevalence of certain subjects indicate?



Personal hygiene products. Items that are often flushed down the toilet — may indicate a nearby source of domestic wastewater and a lack of or inadequate treatment. In this case, the water quality may also be poor. It makes sense to inform the local administration about your findings and ask the sanitary service to analyze the wastewater for microbiological and nitrate contamination.



Construction debris. You can conduct an investigation, try to establish from which construction site waste gets to the coast, write a complaint to the relevant supervisory authorities. Another option is to find those who can conduct such an investigation and, for example, inform journalists or the local administration.



Catering waste. The sale of food and drinks on the shore in the absence of convenient waste collectors is often the cause of a large amount of garbage. You can write remarks or suggestions to the administration of coastal establishments, join forces with other residents — address the local authorities, publicize the problem through the media.



Garbage from afar with inscriptions in other languages — it is possible that these objects came to the coast from a ship or were brought by the current. You can try to understand the routes of ships passing by, write to transportation companies operating in the area.



MICROPLASTICS: THE INVISIBLE PROBLEM

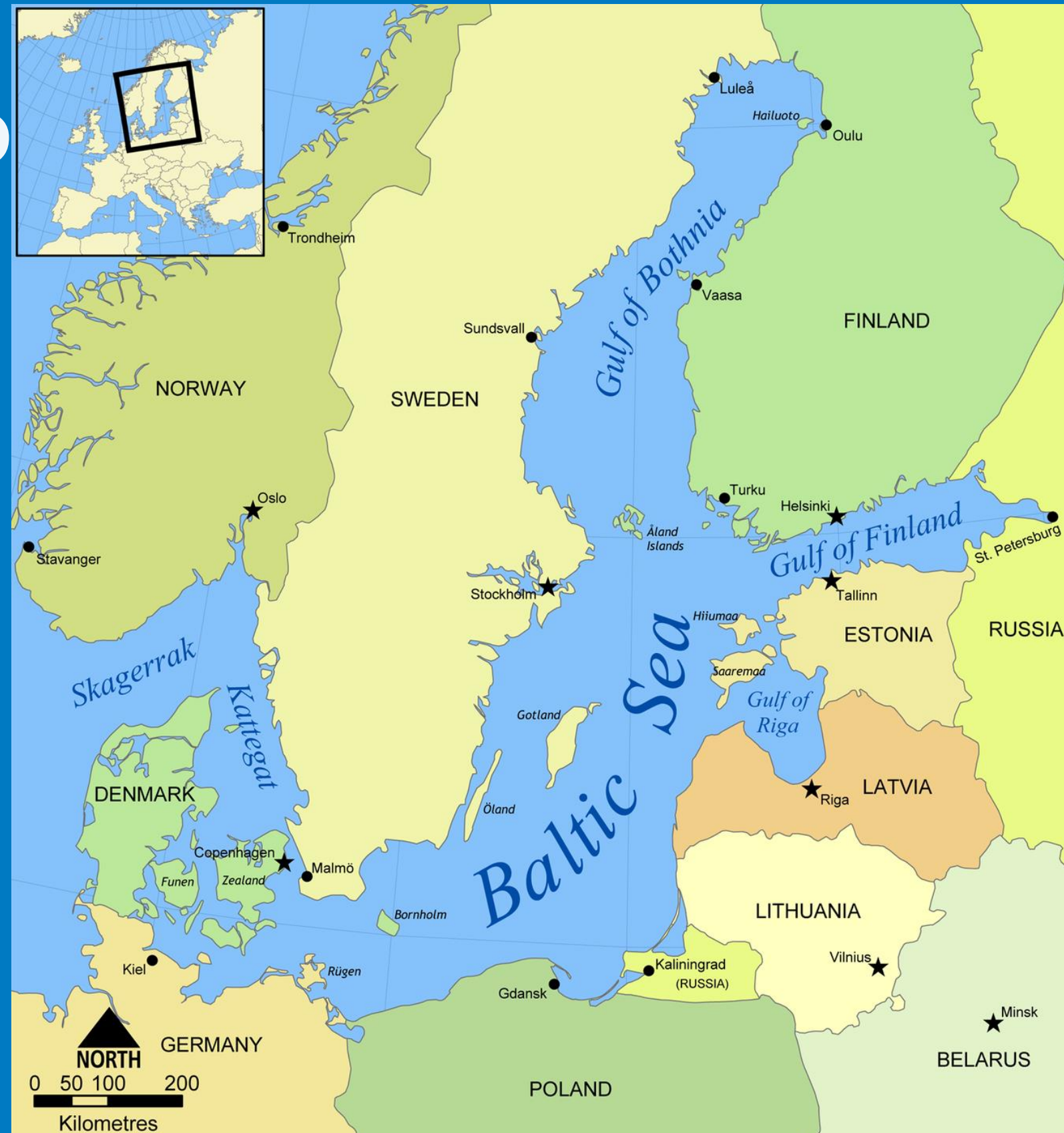
Plastic particles smaller than 5 mm

Sources:

- Fragmentation
- Synthetic textiles
- Tyre abrasion
- Industrial pellets

WHY THE BALTIC SEA?

- Semi-enclosed sea
- Limited water exchange
- Dense coastal population
- Intensive human activities



PLASTIC POLLUTION IN THE BALTIC SEA

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Plastic Pollution in the Baltic Sea (2025)

- Plastic dominates marine litter
32–93% of beach litter items are plastic
- Pollution remains a challenge
11/16 Baltic Sea sub-basins exceeded HELCOM litter thresholds
- Some progress
Baltic coastline macro litter decreased by 45% (2015–16 → 2020–21)

WHY CITIZEN SCIENCE?

CITIZEN SCIENCE & DATA QUALITY

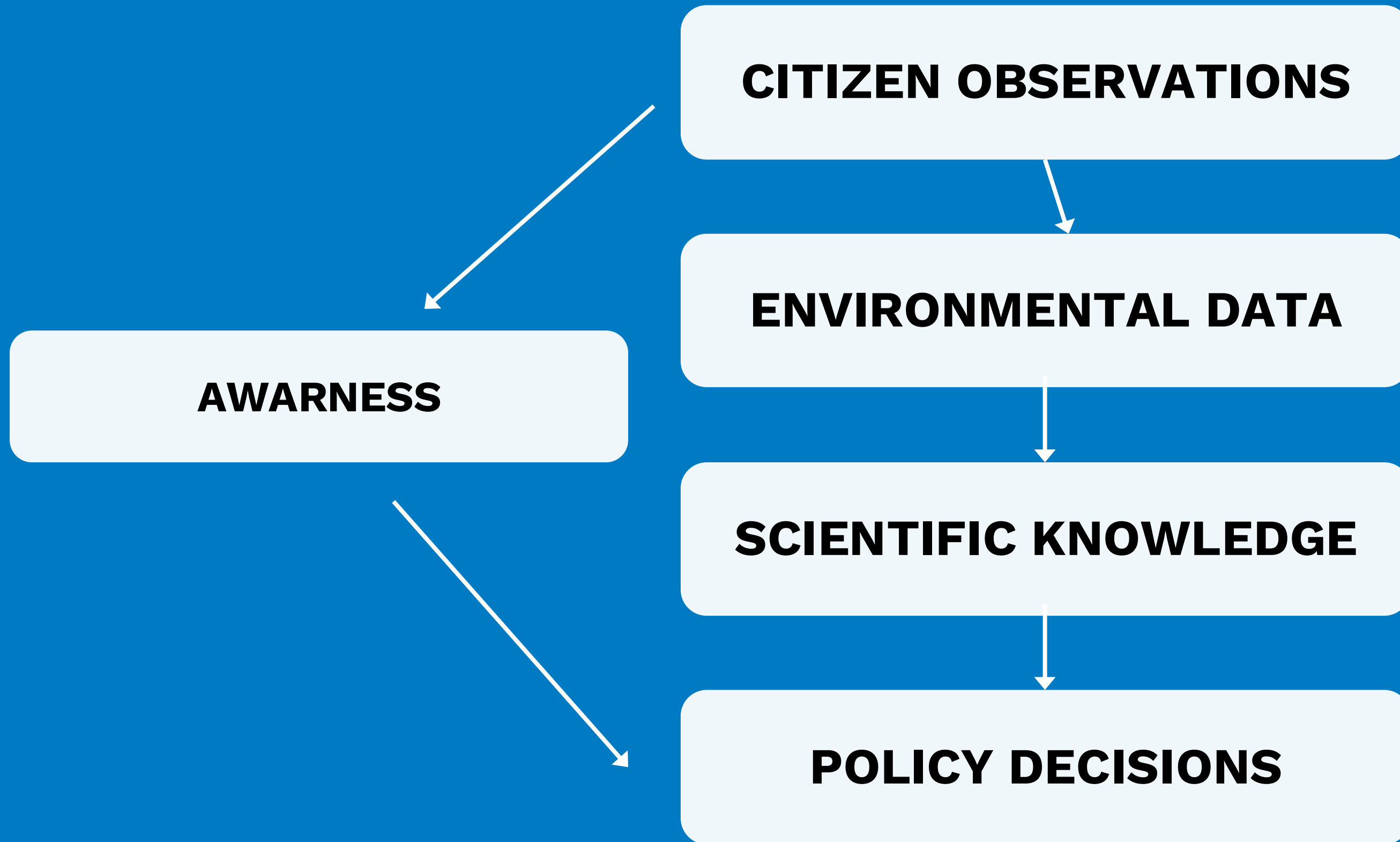
OPPORTUNITIES

- ✓ Increased spatial coverage across coastlines
- ✓ Local knowledge from community participants
- ✓ Continuous long-term monitoring
- ✓ Large-scale data collection at low cost
- ✓ Greater public engagement and awareness

CHALLENGES

- ✗ Need for standardized protocols
- ✗ Training and onboarding requirements
- ✗ Observer variability in data collection
- ✗ Data validation and quality control
- ✗ Ensuring consistent methodology





Approach

**Coastal Litter
Monitoring**

Brand Audit

Pellet Hunting

**Microplastic
Monitoring**



SUBMIT YOUR FINDS

**Quantity and
location of data collected**

**Quantity and
location of visible litter**

**Types, packaging
and materials**

**Quantity and location of
pellets found**

**Microplastic particles in
samples**

BEACH LITTER SURVEY



What?

- Standardised survey of coastal litter
- Collect and classify macro-litter (>2.5 cm)
- Defined monitoring area (100 m coastline × 10 m width)
- Record litter types, materials and quantities
- Upload data for comparison with other monitoring sites

Purpose

- Understand where marine litter comes from
- Identify dominant litter types and hotspots
- Develop targeted prevention measures
- Support local and regional environmental action

HOW? ALGORITHM OF ACTION



1. Choose location

It is desirable that the selected site is located in places of mass visitation, that has not been cleaned. The area should be accessible for research all year round.



2. Prepare resources

Be sure to bring the following: first aid kit, protective gloves, trash bags, dense containers to collect sharps samples. On site, you may also want to bring markers to mark the area, tape to measure the site, a clipboard, a pencil and printed protocols (if you plan to enter data into the database later), and scales.



3. Describe the study area prior to monitoring



4. Mark the site

It is important to limit the study area visually. You can collect litter wider than the study area, but do not count these items when recording results.



5. Collect and identify litter, send data

All litter should be collected from the site. Data can be recorded on a paper litter type chart (link to the methodology containing all protocols at the end of the chapter) or directly onto the [Marine Litter Watch](#) website. If you cannot identify an item (understand what it is and what it is for), record it as "unidentified" and attach a photo when uploading the data.

Important notes

- Record all items >2.5 cm (including cigarette butts and caps)
- Document large objects that cannot be removed
- Use all categories for comparable data
- Empty categories are expected and meaningful

Working in small groups:

1. Select the survey area.
2. Collect visible litter.
3. Categorise items using the survey protocol.
4. Record observations.
5. Estimate quantities.
6. Remove litter from the site after documentation.

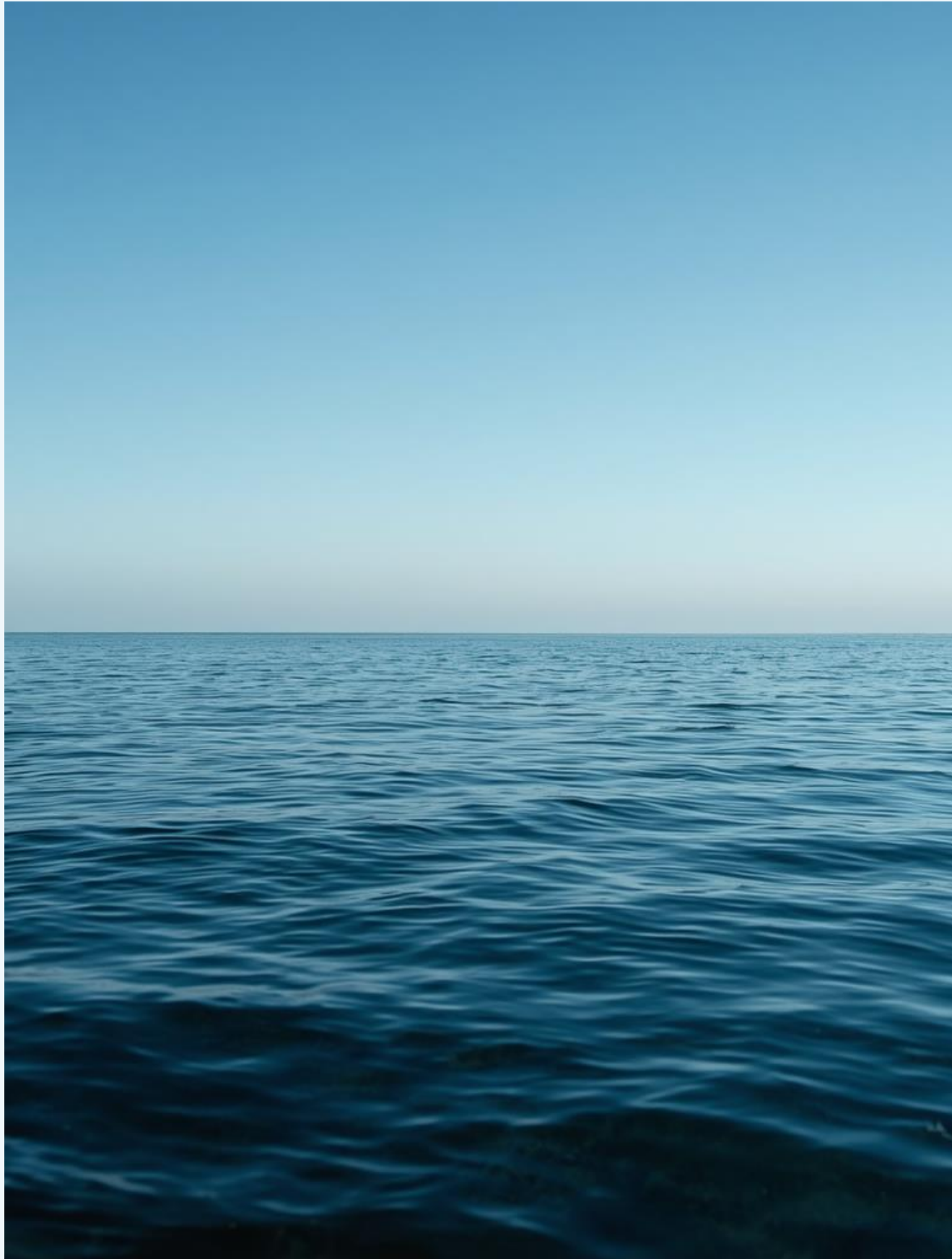
Each group needs:

- gloves
- litter bags
- monitoring sheet
- pencils

Possible guiding questions:

- Which materials dominate?
- Which items appear most frequently?
- What do these items tell us about possible pollution sources?

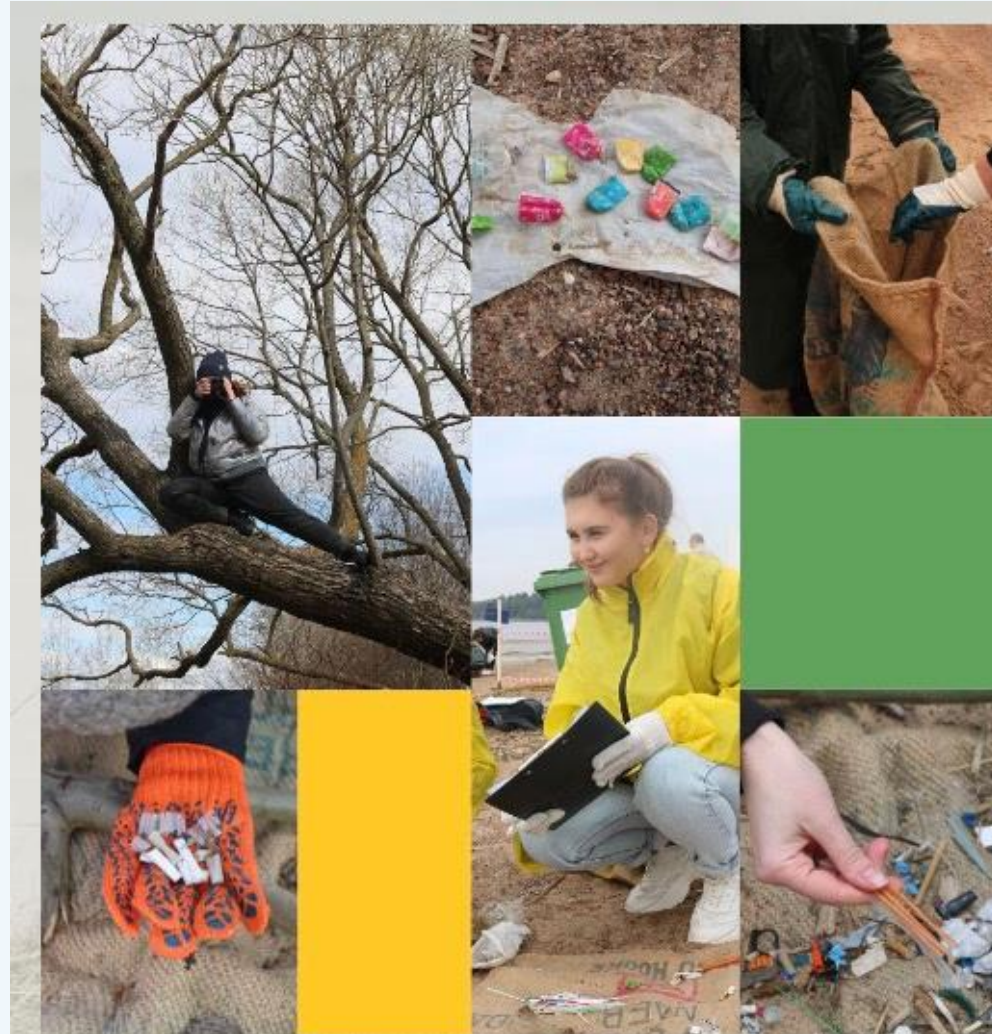
QUESTIONS?



- Which findings were surprising?
- Which pollution sources appear to be local?
 - Which may originate from tourism, rivers or shipping?
- Which waste categories could be reduced most easily?
 - How can citizen science contribute to better environmental management?

Marine LitterWatch

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Take photos and videos

Spread the word on social media

#BreakFreeFromPlastic



**Marine
Debris Tracker**

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