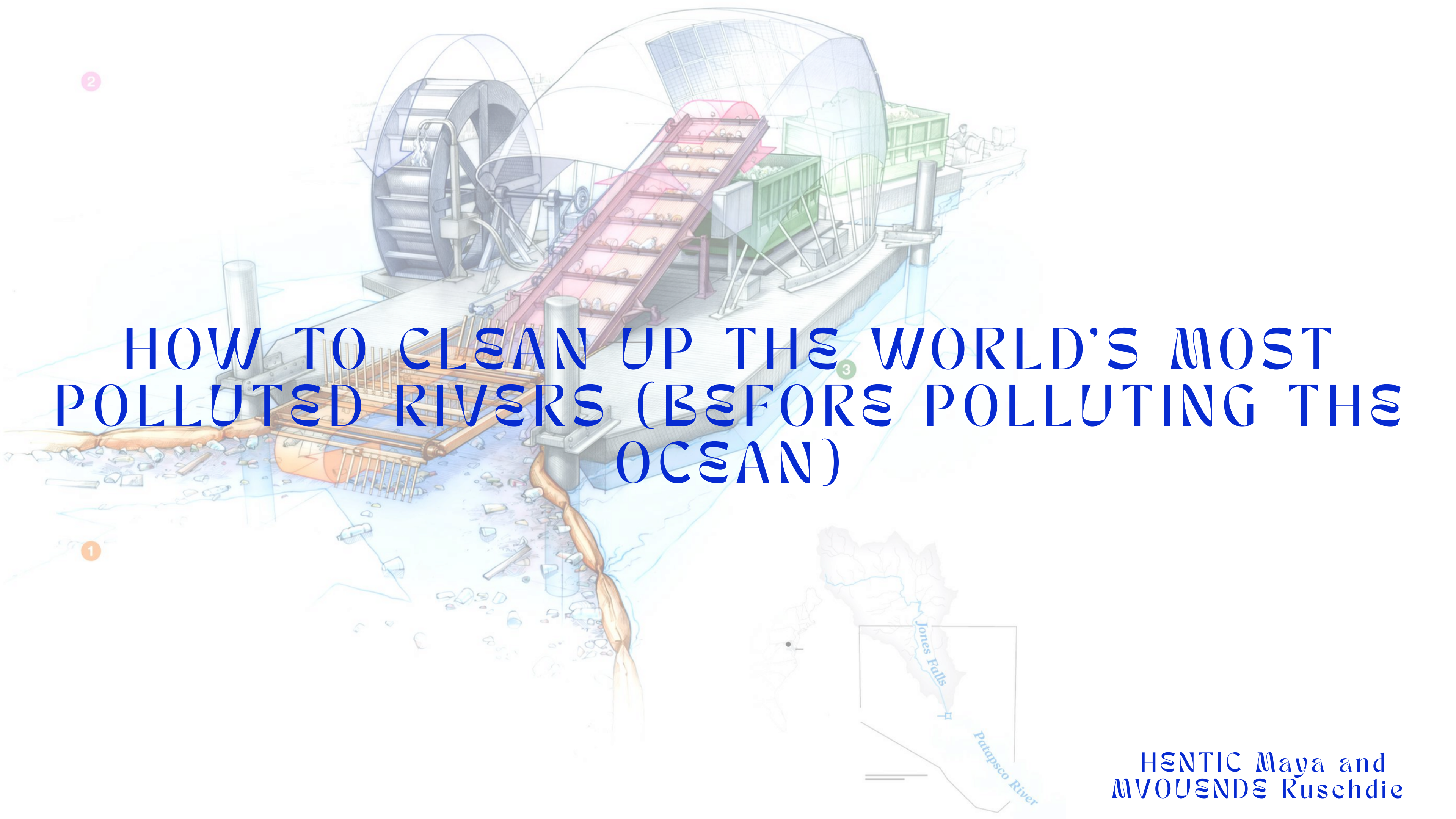




# HOW TO CLEAN UP THE WORLD'S MOST POLLUTED RIVERS (BEFORE POLLUTING THE OCEAN)

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MVOUENDE Ruschdie

# CONTEXT

- video of média CNBC = Consumer News and Business Channel
- Video published on august 3, 2022
- The video focuses on ocean pollution on a global scale and uses Baltimore, Maryland, as an example to present the solutions that have been developed to tackle this problem.
- Baltimore is also a port town

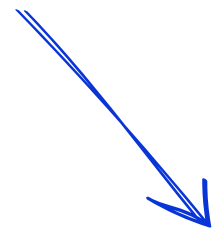


# Vocabulary

**Wheels** → a circular mechanic piece turning around an axis

**Feets or ft** → its a mesure like meter in Europe, 1 ft = 30 cm

**Wastes = Trash**



a more appropriate term in ecology

**sustainable** → durable



**externalities** → hidden coast of ecosystems and biodiversity dégradation

**informal dump/open dump** → an uncontrolled place where waste is disposed of

**cost-efficient** → profitability

**Waste to energy**

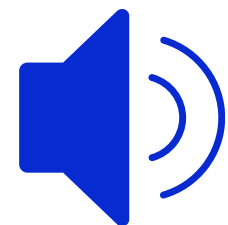


**Energy recovery**



# Pronunciation tips

## Rivers

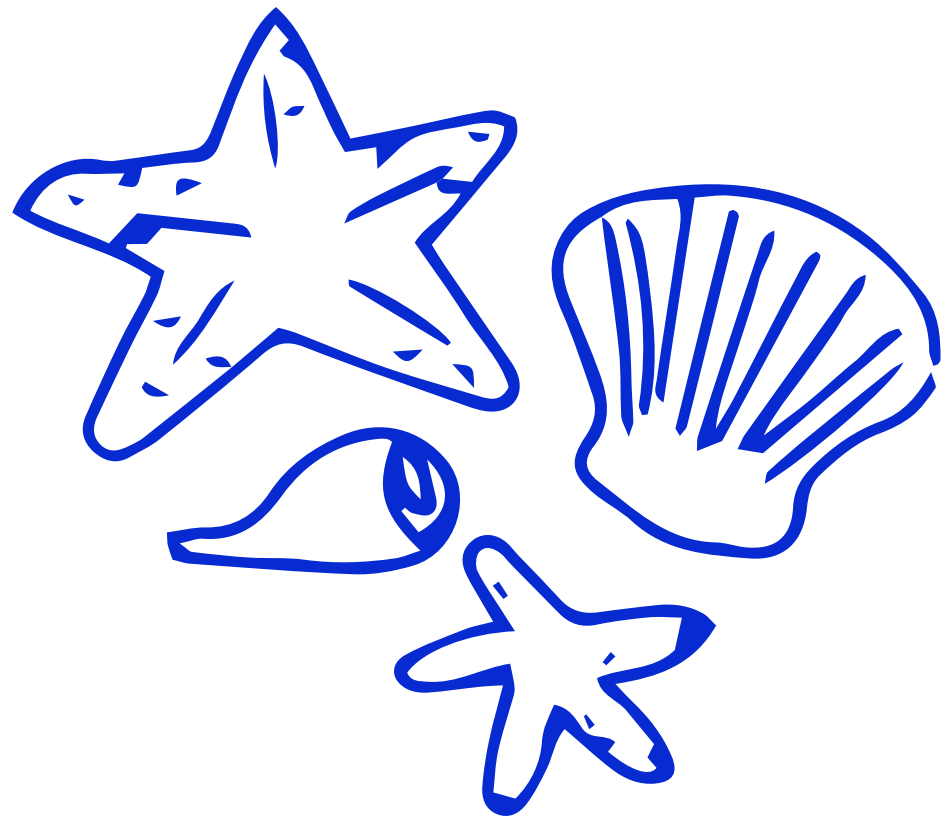


ri-vuhz

## Ocean



OH-shun

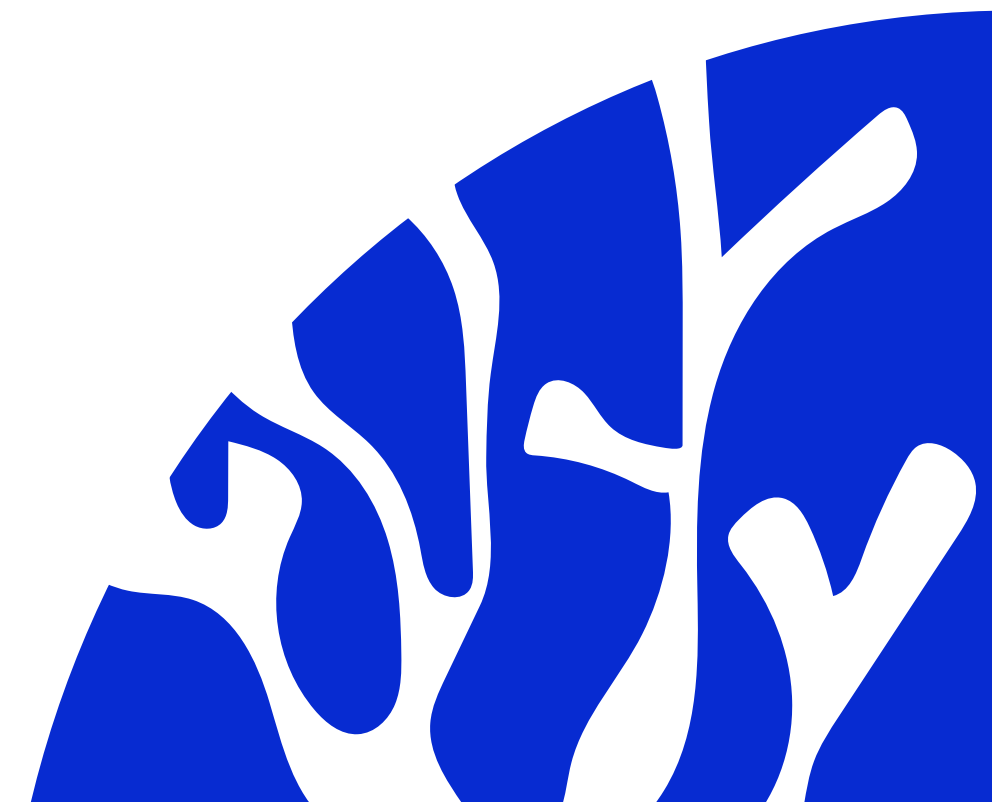


1 Ocean pollution : causes and origins

2 Trash Wheels : temporary solution

3 Financing and hidden coast(externalities)

4 Durable solutions



# 1 Oceans pollution : causes and origins

Every year, it's estimated that up to 2.97 million tons of plastic enters the ocean through rivers



## Pollution in towns

- low-income countries ( Southeast Asia, Central Africa, and Central America), the waste generated is either not collected (60%) or improperly disposed of in open dumps or burned (40%).
- middle-income countries like the Philippines, India, and Malaysia actually contribute the most to oceanic pollution



## Rain

When it rains, waste is washed from the land into the rivers



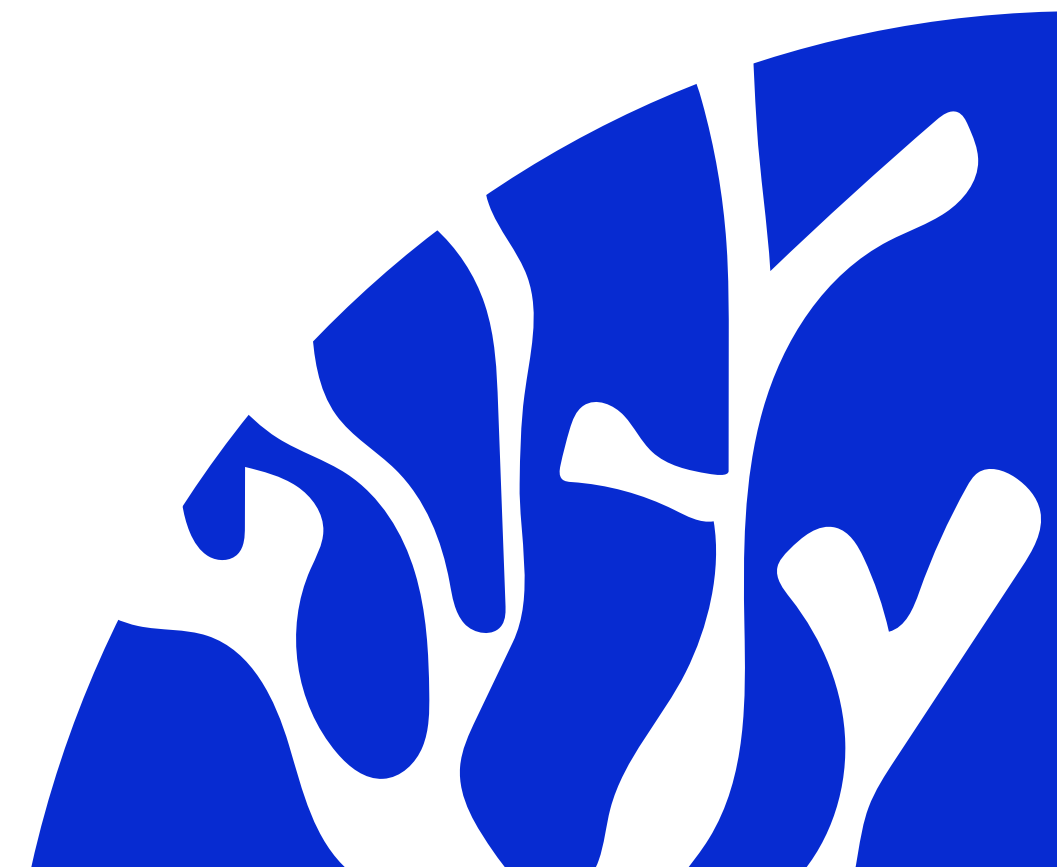
## Rivers

Waste isn't collected from rivers either. Rivers flow into the ocean.



## Ocean

In the ocean, waste directly harms marine biodiversity and is difficult to collect.



# 1 Oceans pollution : causes and origins

The Ocean Cleanup foundation :

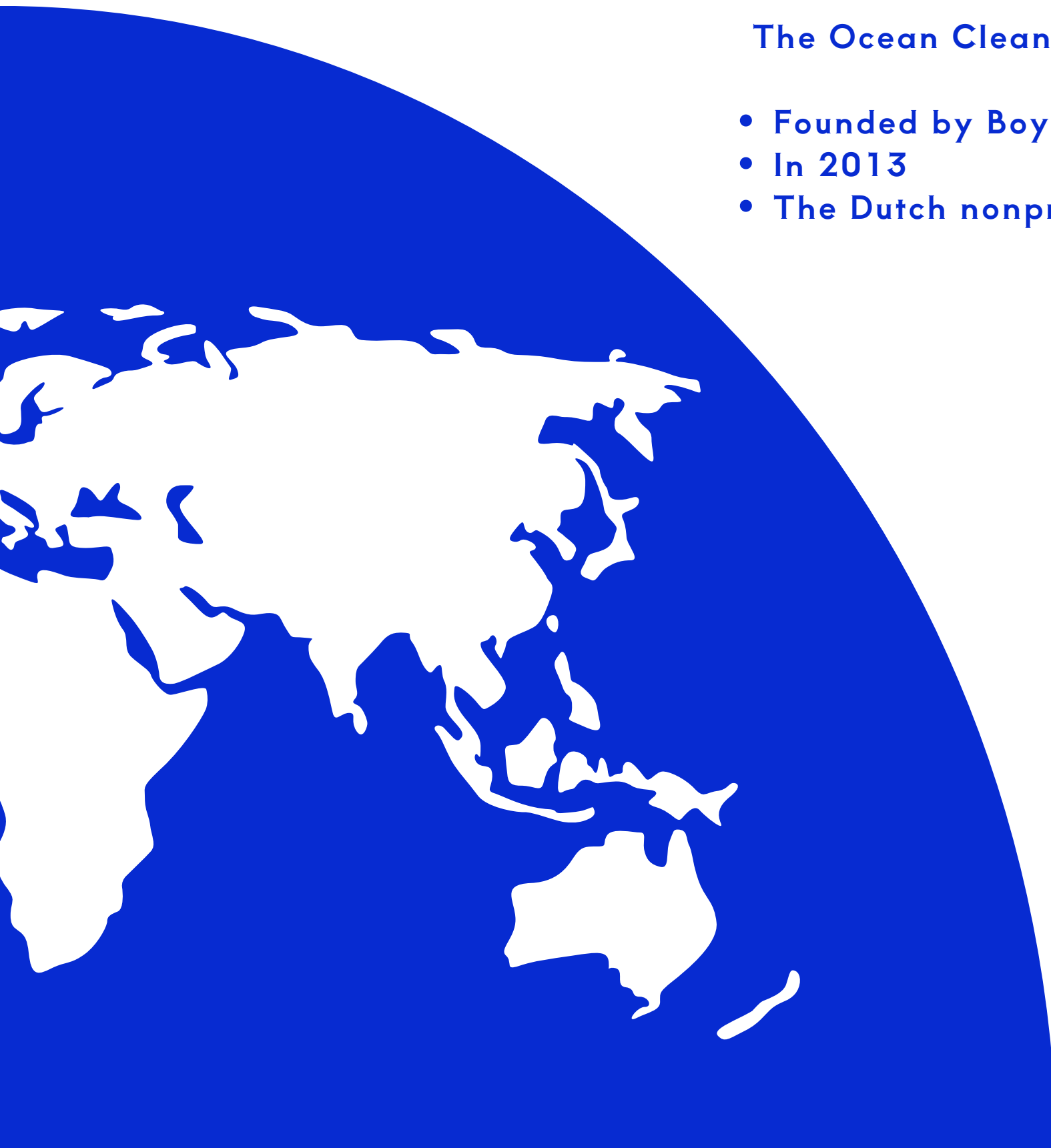
- Founded by Boyan Slat
- In 2013
- The Dutch nonprofit organization

## THE OCEAN CLEANUP

- A 2021 study by The Ocean Cleanup found that 1000 hyper-polluting rivers are the source of all the plastic in the oceans that is transported there by rivers.

- Other conclusion : Most plastic pollution never reaches the oceans

→ To reduce waste, it must be collected and disposed of before it reaches the ocean : in the rivers



## 2 Trash wheels



Mister, Captain and Professor Trash Wheel and Gwynnda are  
a touristic attraction in Baltimore



## 2 Trash wheels

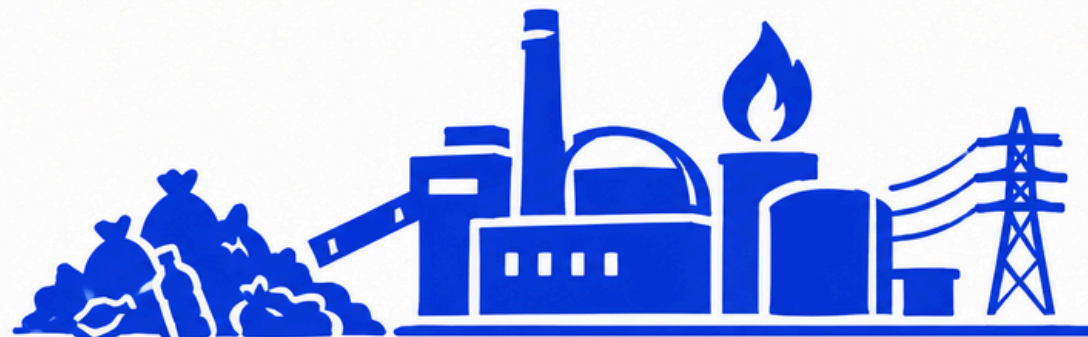
1) Trash from streets, parking lots, alleys and highways is washed into storm drains, creeks, then the rivers feeding the harbor.

2) V-shaped booms with weighted rubber skirts (about 2 ft deep) catch floating trash and funnel it to the wheel.

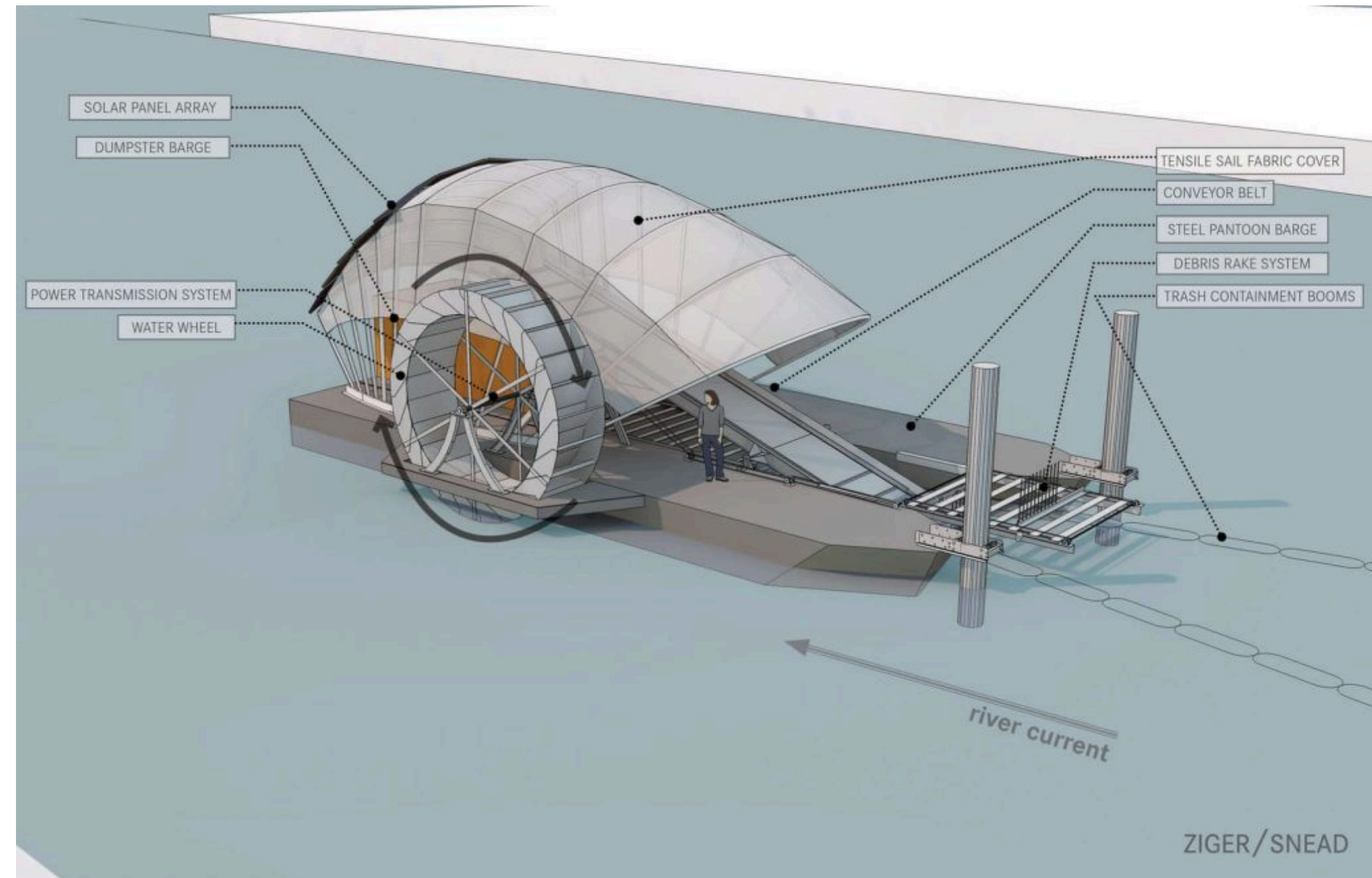
3) The wheel, driven by the river current and solar panels, powers a conveyor belt.

4) The belt lifts trash into a dumpster on a floating barge; when full, a barge with an empty dumpster replaces it.

5)

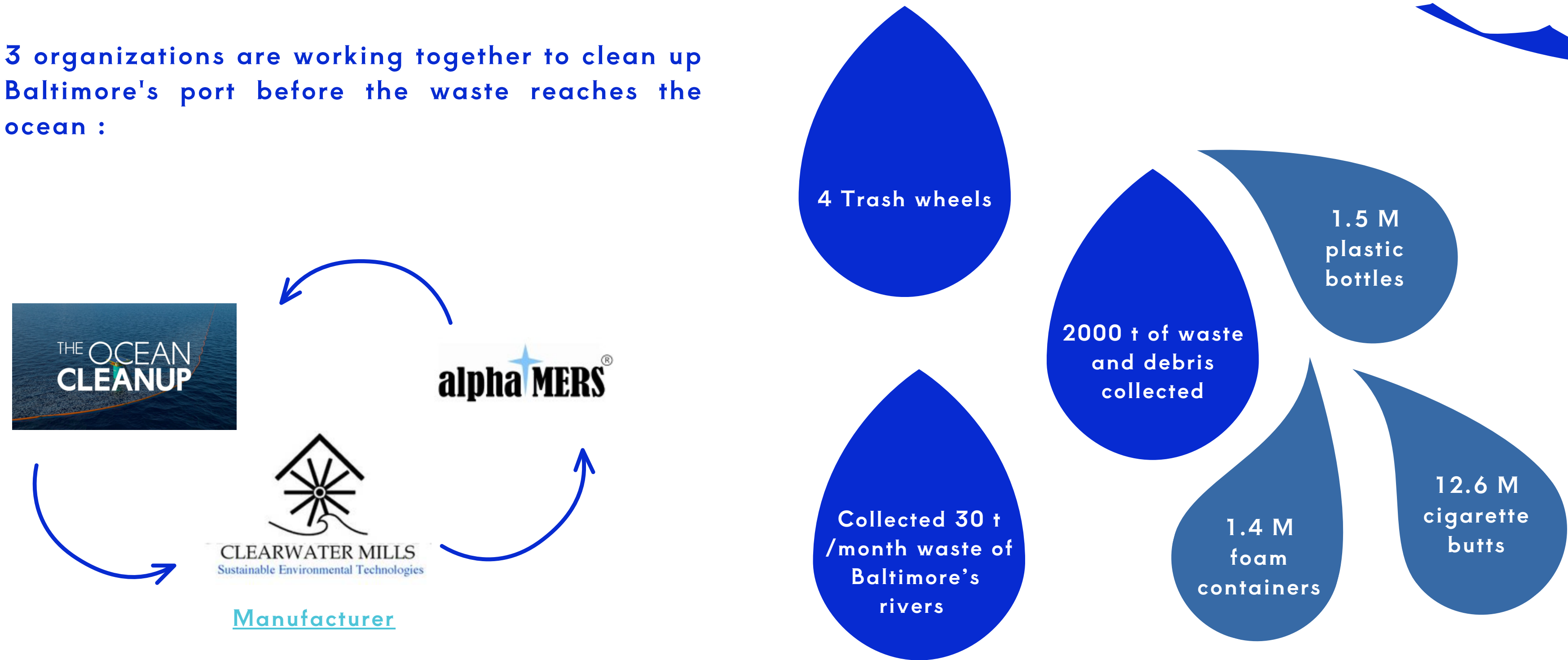


Waste Disposal Through Incineration and Energy Recovery



# 2 Trash wheels

3 organizations are working together to clean up Baltimore's port before the waste reaches the ocean :



# 3 Financing and hidden coast (externalities)

## coast of a new wheel

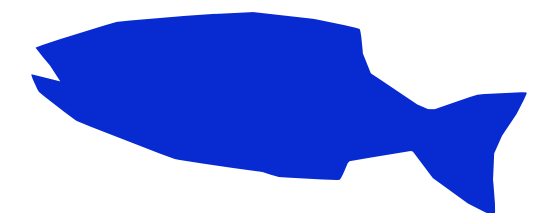
- Installation : 400 000 dollars to 1.5 million dollars
- Exploitation depending on river conditions, waste infrastructure and permits : 18 000 to more 100 000 dollars / year

= important caost BUT massive externalities incurred by plastic pollution



## Hidden coast of plastic pollution

- The impact on marine life = sustained health of ecosystems
- Microplastic contamination of food
- Microplastic contamination of drinking water



# 3 Financing and hidden coast (externalities)

→ Funding for this cost-efficient project, is therefore a major challenge

New wheels are in the works in Texas, California and Panama. They will be financed by:

- The Benioff Ocean Initiative
- The Coca-Cola Foundation

Which together are supporting a portfolio of river cleanup projects around the world.



BENIOFF  
OCEAN  
INITIATIVE

THE  
*Coca-Cola*  
FOUNDATION

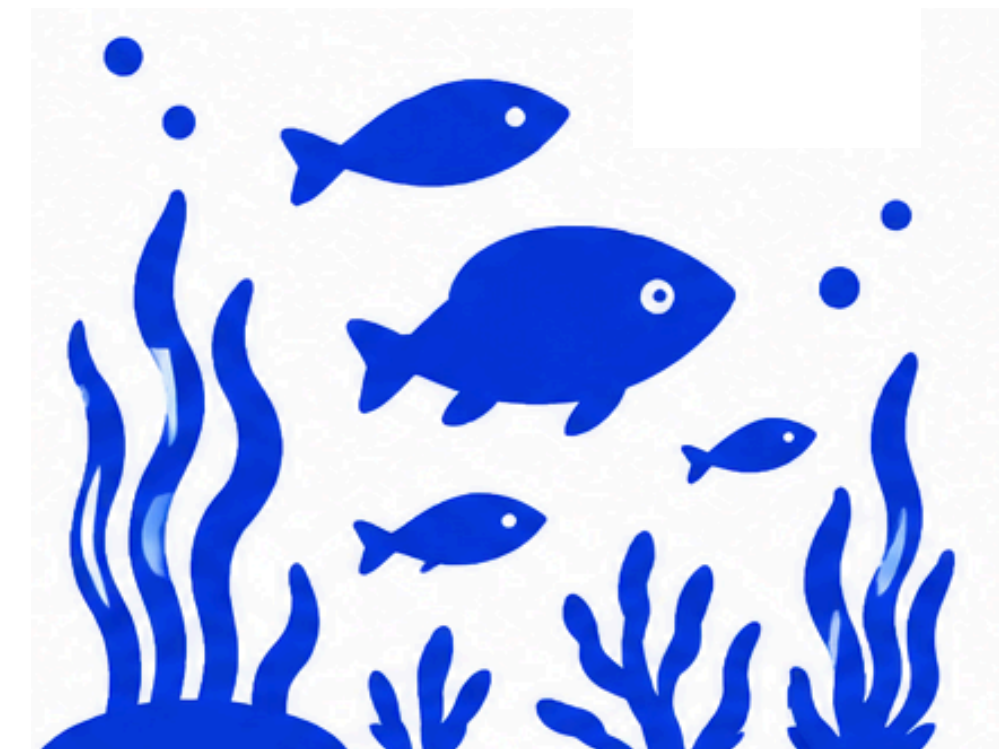
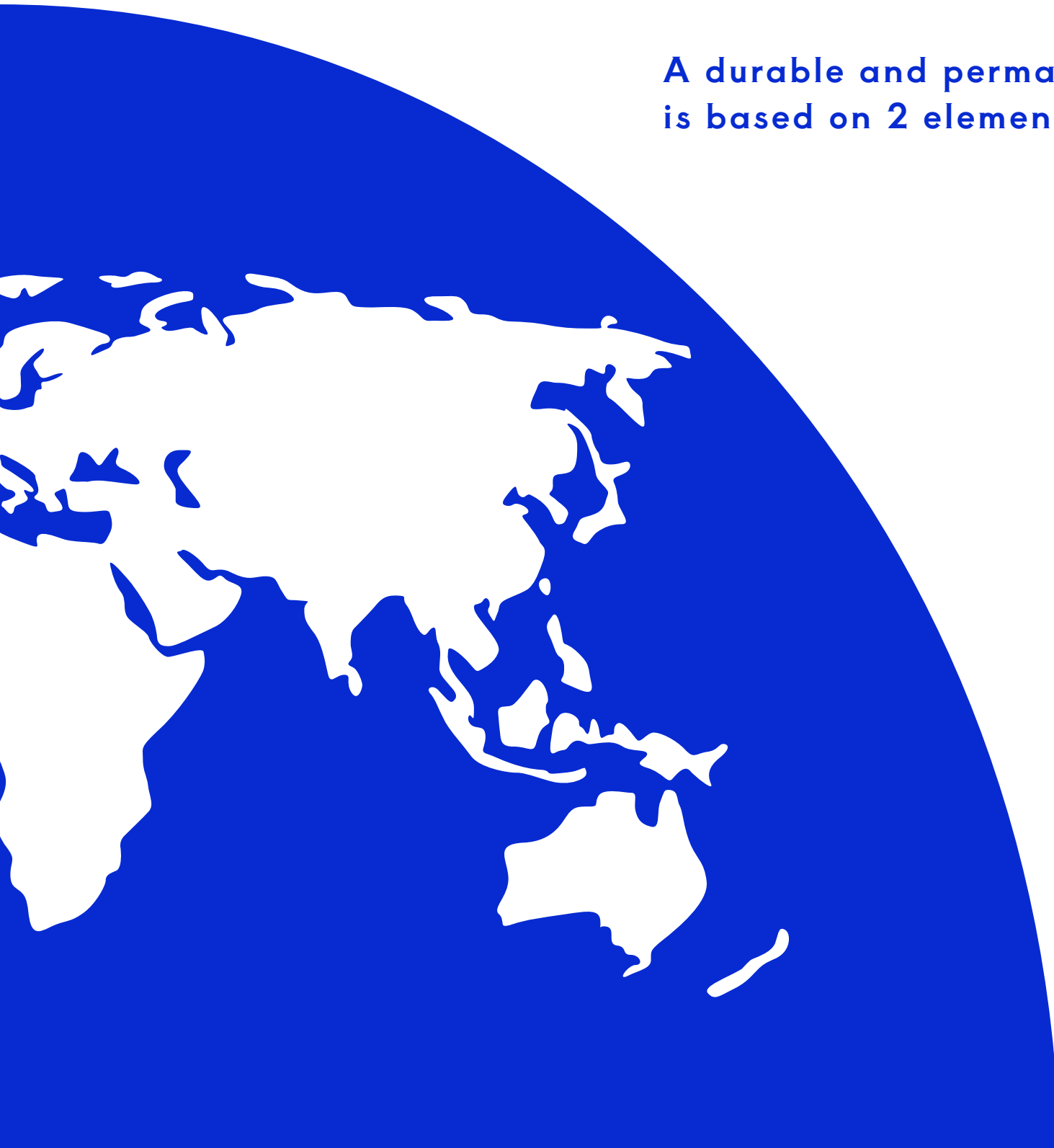
# 4 durable solution

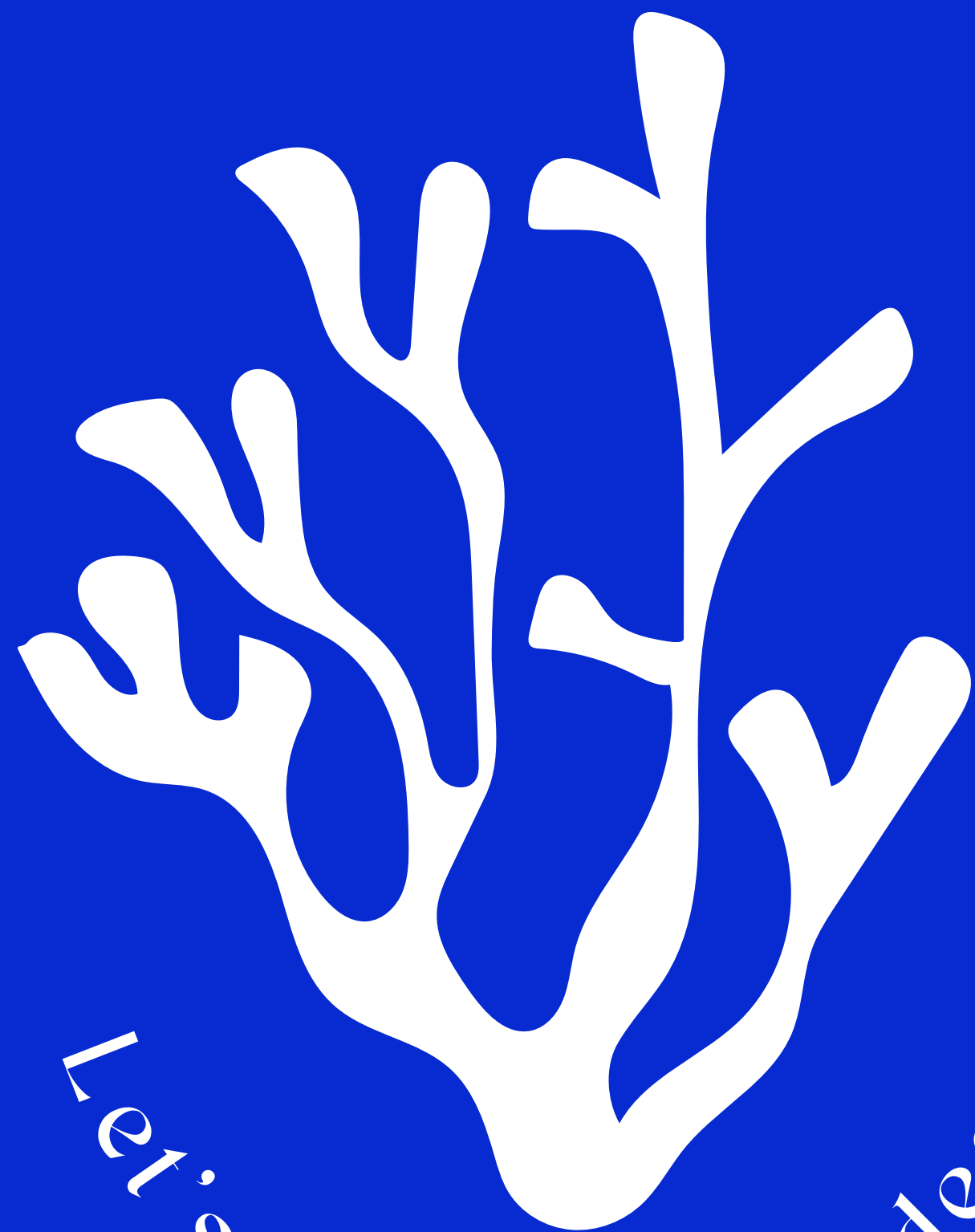
The solutions developed by these organizations are effective and useful in a short to medium term because reducing pollution in rivers is less expensive than removing it from the ocean. But are not sustainable in the long term.

A durable and permanent solution  
is based on 2 elements :

Changing behaviors :  
educating, raising  
awareness, and  
reducing packaging  
consumption

Investing in Waste  
treatment  
Facilities





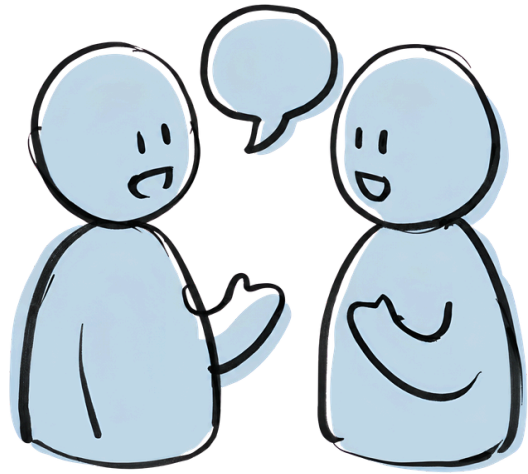
*Let's watch the video!*

# Two Truths one Lie

- Form pairs
- Each prepares three sentences about the video, one of which is false (ex : Gwynnda is a tourist attraction. The wheels are powered by diesel. Baltimore is a port town.)
- The second person has to guess which sentence is false.
- switch roles !



# Arrow crosswords

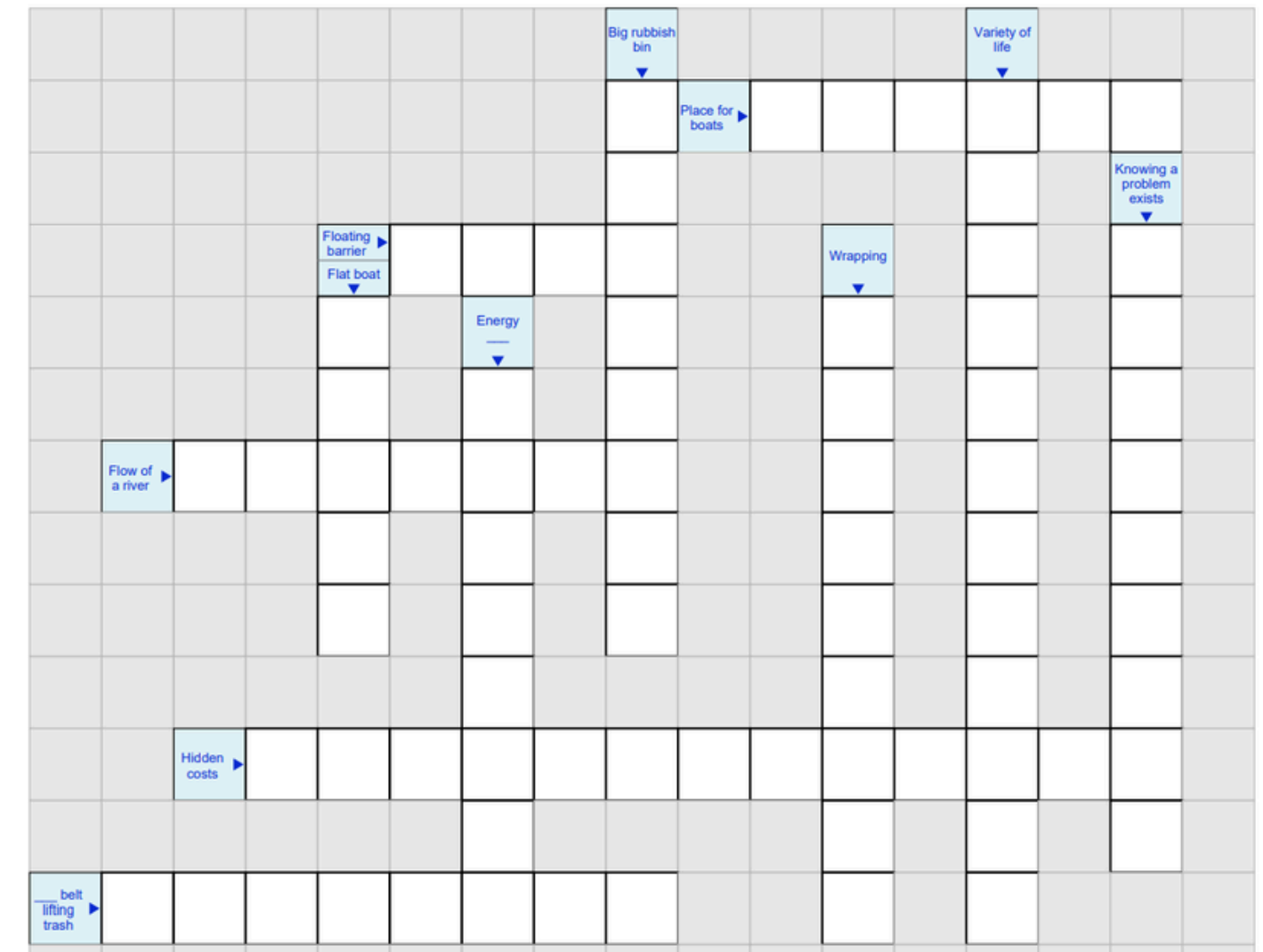
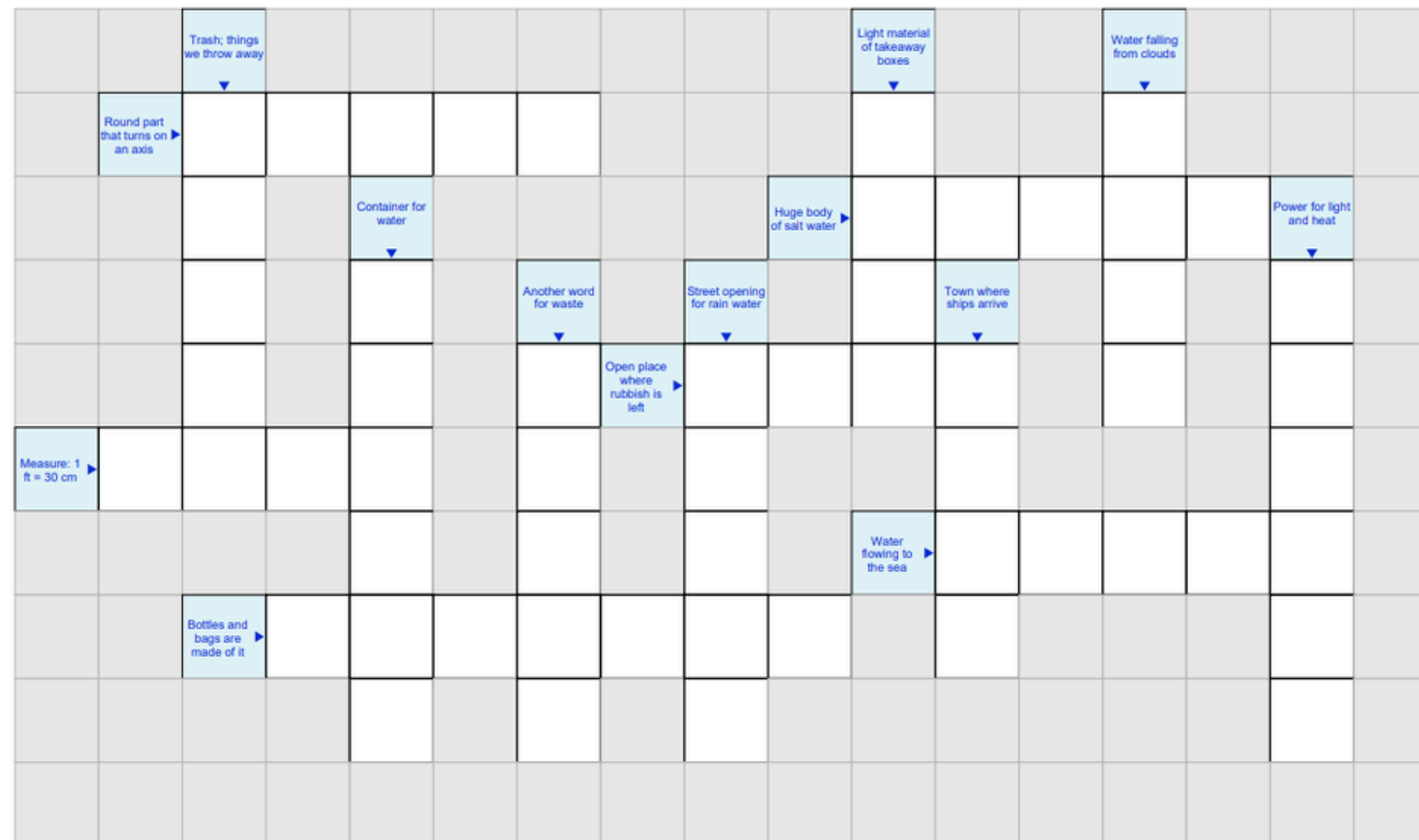


It's a collaborative game : Talk it over with each other and finish the grid as quickly as possible



## Team 2

# Team 1

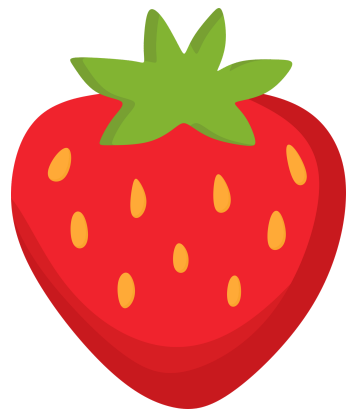


# Undercover

**Goal** : Most players have the same secret word. One player (the Undercover) has a similar but different word. Sometimes one player (Mister White) has no word at all. Everyone has to find out who is different without giving away their own word.

**Roles** :

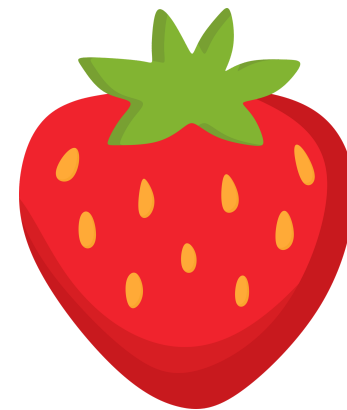
- **Civilians**: they all get the same word. They must find the Undercover and Mister White.
- **Undercover**: they get a word close to the civilians' word. They don't know they're different, so they must blend in.
- **Mister White**: they get no word. They must listen carefully and bluff.



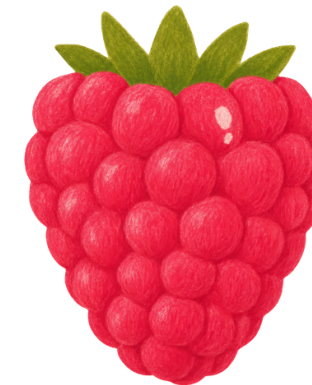
**Civilians**



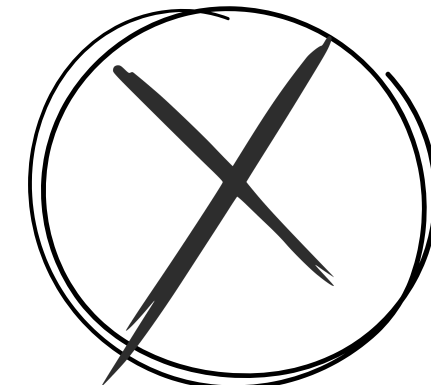
**Civilians**



**Civilians**



**Undercover**

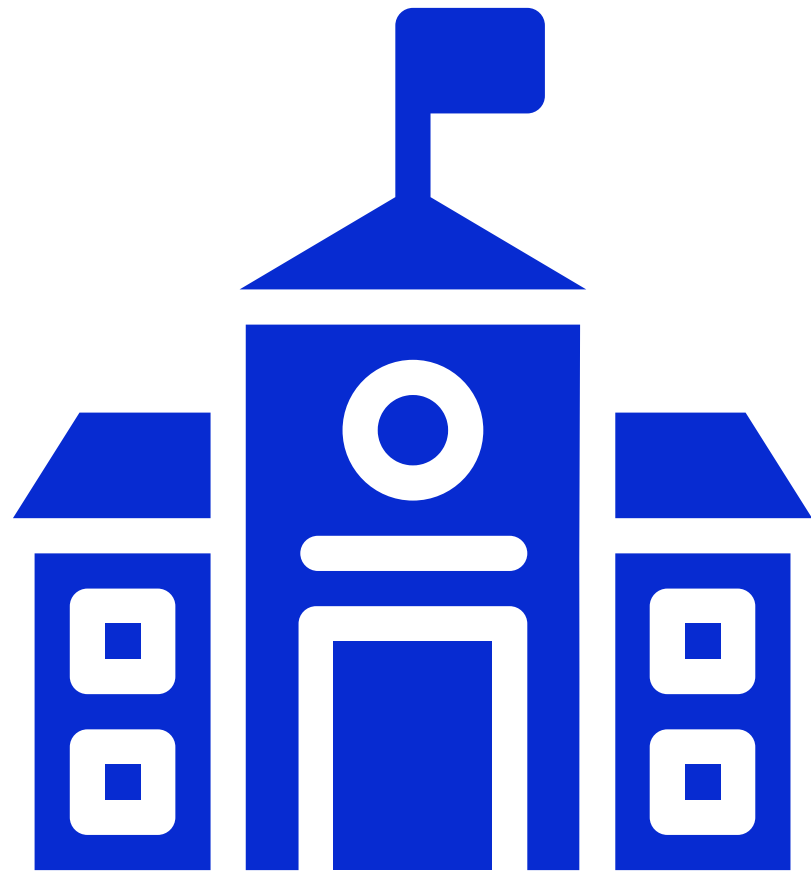


**Mister White**

In each round, you have to say a word related to the secret word. At the end, we vote to decide who is the undercover agent and who is Mr. White.

# The Ocean Rescue Challenge

The class is a town hall. Three projects are under discussion, but there is only enough funding for one. Each group prepares to present its project (15 min) and then presents it to the class in 2 minutes.



- **Group 1** – Trash Wheels
- Should we build more Trash Wheels to collect waste from rivers??
- **Group 2** – Education and Behavior
- Is education the best way to prevent plastic waste from reaching rivers and oceans?
- **Group 3** – invest in waste treatment facilities
- The city should build a new waste treatment facility.

Finally, the class votes for the most effective and realistic idea to help reduce ocean pollution.

# Taboo game

Someone comes to the board and has to get the others to guess a **SECRET WORD**, without saying it or any of the **PROHIBITED WORDS**.

