PLASTICS AND WATER AND RECYCLING HOW DO WEGO FROM HERE -

DR SAMEER JOSHI

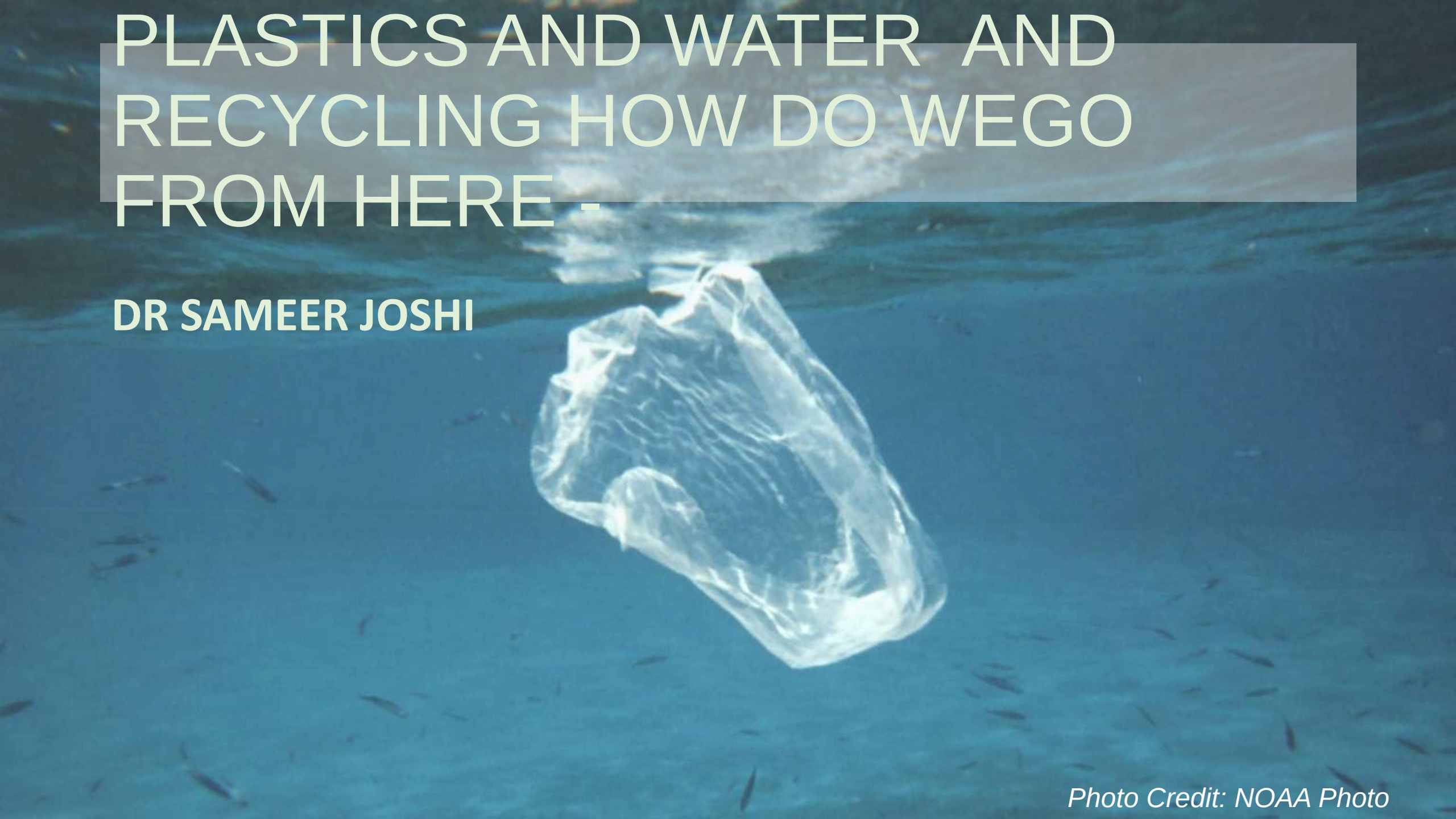


Photo Credit: NOAA Photo

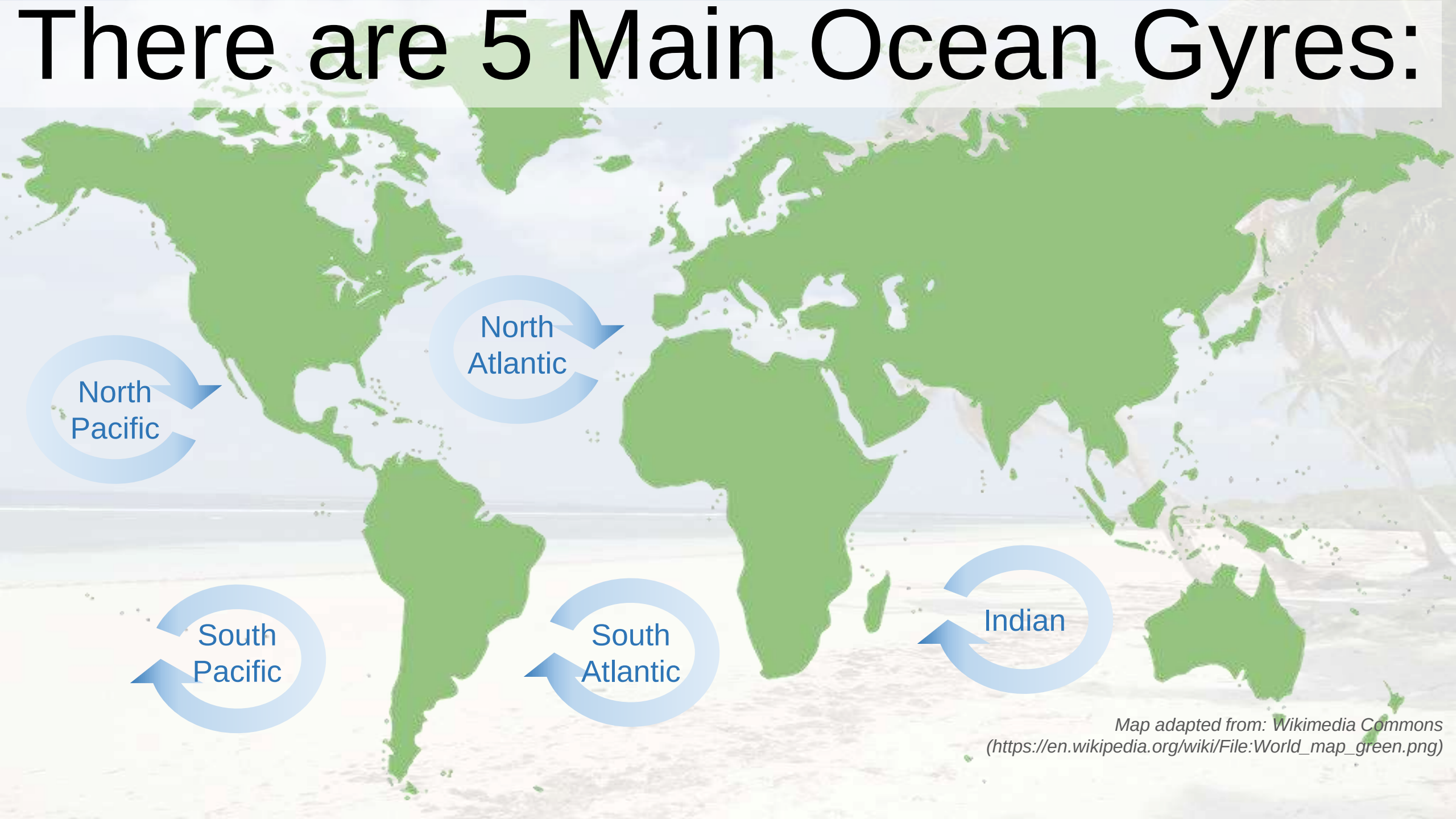
THE GYERS

THE PROBLEM Researchers have found plastic pollution across the world's oceans.

1. Plastic accumulates in ocean gyres!

In some parts of the ocean, wind and currents move in a circular pattern. In the middle of this circle, the ocean is calm. Over time, trash from the coastlines will be moved via these currents and eventually accumulate in the calm center, also known as a gyre. There are 5 main ocean gyres.

There are 5 Main Ocean Gyres:



Map adapted from: Wikimedia Commons (https://en.wikipedia.org/wiki/File:World_map_green.png)

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WHAT WE KNOW

1. Plastic accumulates in ocean gyres
2. Marine debris can harm the ocean life
3. **A lot of ocean debris is *microplastics***

Microplastics are pieces of plastic that are smaller than 5 mm in diameter. They can be *primary microplastics* or *secondary microplastics.*

Primary microplastics are microplastics that have always been smaller than 5 mm (e.g. a bead). Secondary microplastics are microplastics that broke

Photo Credit: Meredith Evans

What makes the microplastics?

Use the examples below to help you answer question number 3 on your worksheet

PRIMARY MICROPLASTICS

MICROBEAD

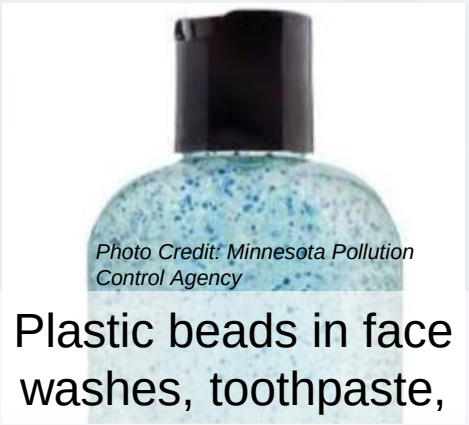


Photo Credit: Minnesota Pollution Control Agency

Plastic beads in face washes, toothpaste, etc.

NURDLES

Photo Credit: Wikimedia Commons (https://commons.wikimedia.org/wiki/File:Nurdles_01_gentlemanrook.jpg)

Plastic beads made by plastic manufacturers

SECONDARY MICROPLASTICS

PLASTIC FILM

Photo Credit: Wikimedia Commons (https://tr.m.wikipedia.org/wiki/Dosya:Saran_Wrap_02.JPG)

Plastic wrap, zip locks & food packaging

RUBBER

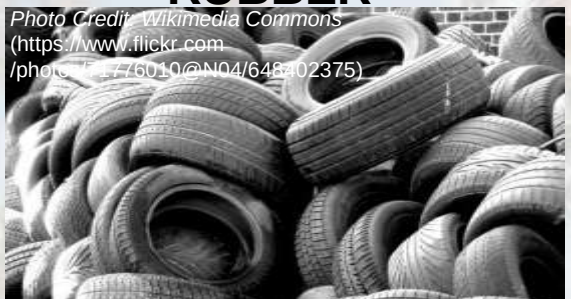


Photo Credit: Wikimedia Commons (https://www.flickr.com/photos/[illegible]/6010@N04/648402375)

Tires, shoes, gloves.

NYLON THREAD

Photo Credit: Wikimedia Commons (https://commons.wikimedia.org/wiki/File:1-DSC_0001_(18).jpg)

Fishing Nets & Clothes

POLYSTYRENE

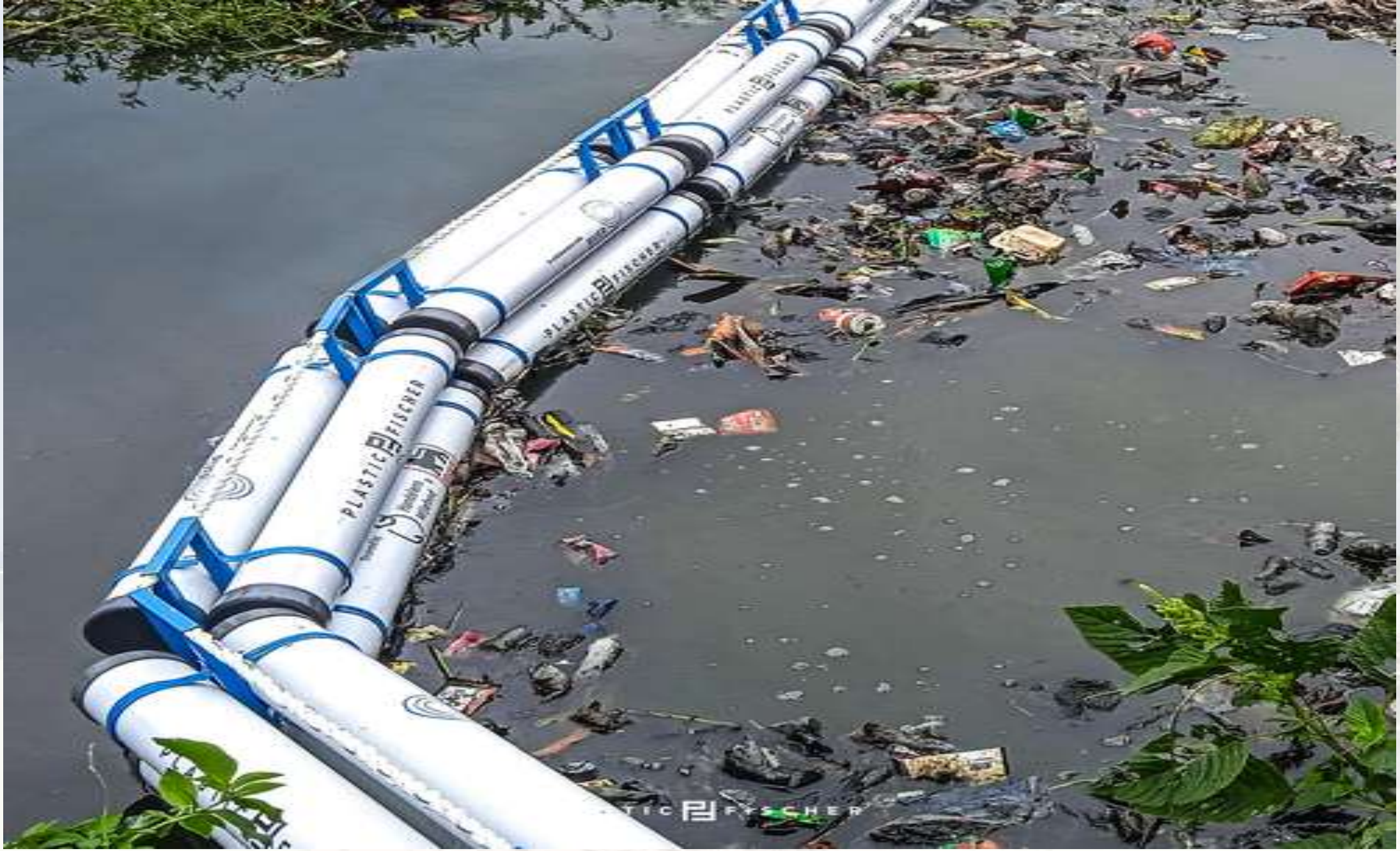
Photo Credit: Wikimedia Commons (https://commons.wikimedia.org/wiki/File:Styrofoam_peanuts.JPG)

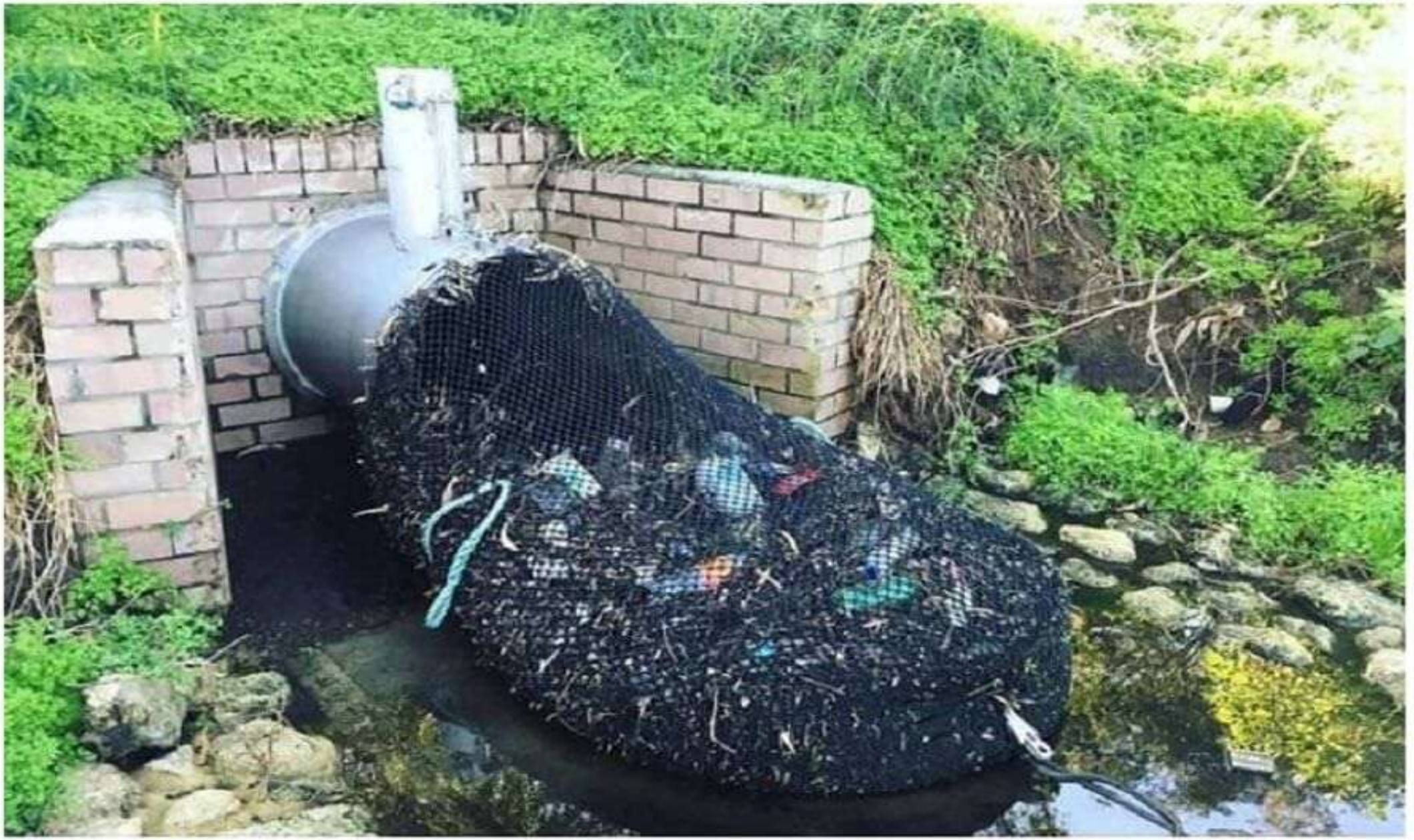
Foam food containers, cups and packaging

POLYPROPYLENE

Photo Credit: Wikimedia Commons (https://commons.wikimedia.org/wiki/File:Recyclables.JPG)

A LOT of stuff! Plastic bottles, food wrappers, phone cases...

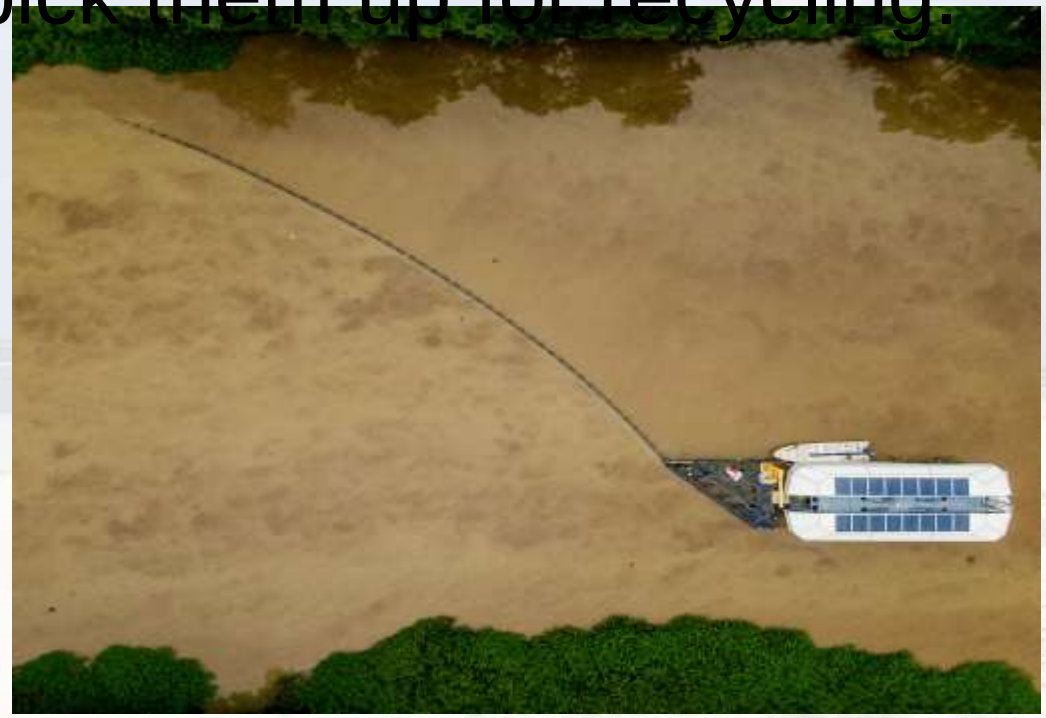

PLASTIC FISCHER



A 2017 report published in the Environmental Science and Technology journal revealed that 88 to 95 per cent of the plastic waste transported to the ocean via rivers comes from just ten rivers. These include the Nile, the Yellow River and the Ganges.

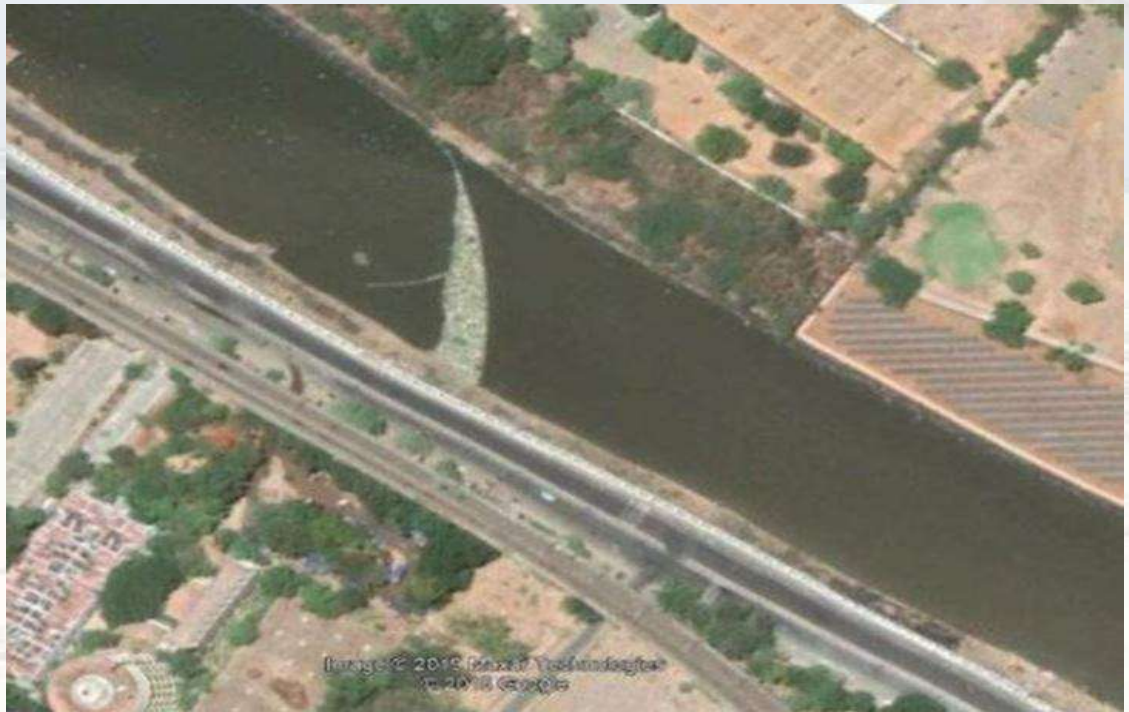
An estimated 4.8 to 12.7 million tonnes of plastic end up in the oceans each year. Circular-economy charity the Ellen MacArthur Foundation estimates that by 2050 there will be more plastic than fish in the oceans.

The Interceptor is an autonomous solar-powered device that uses a barrier stretching across a river to collect plastic. Rubbish is funneled towards a floating processing plant that resembles a barge. The trash is passed up a conveyor belt and deposited into bins, which signal to the system when they are full so that a boat can come and pick them up for recycling.

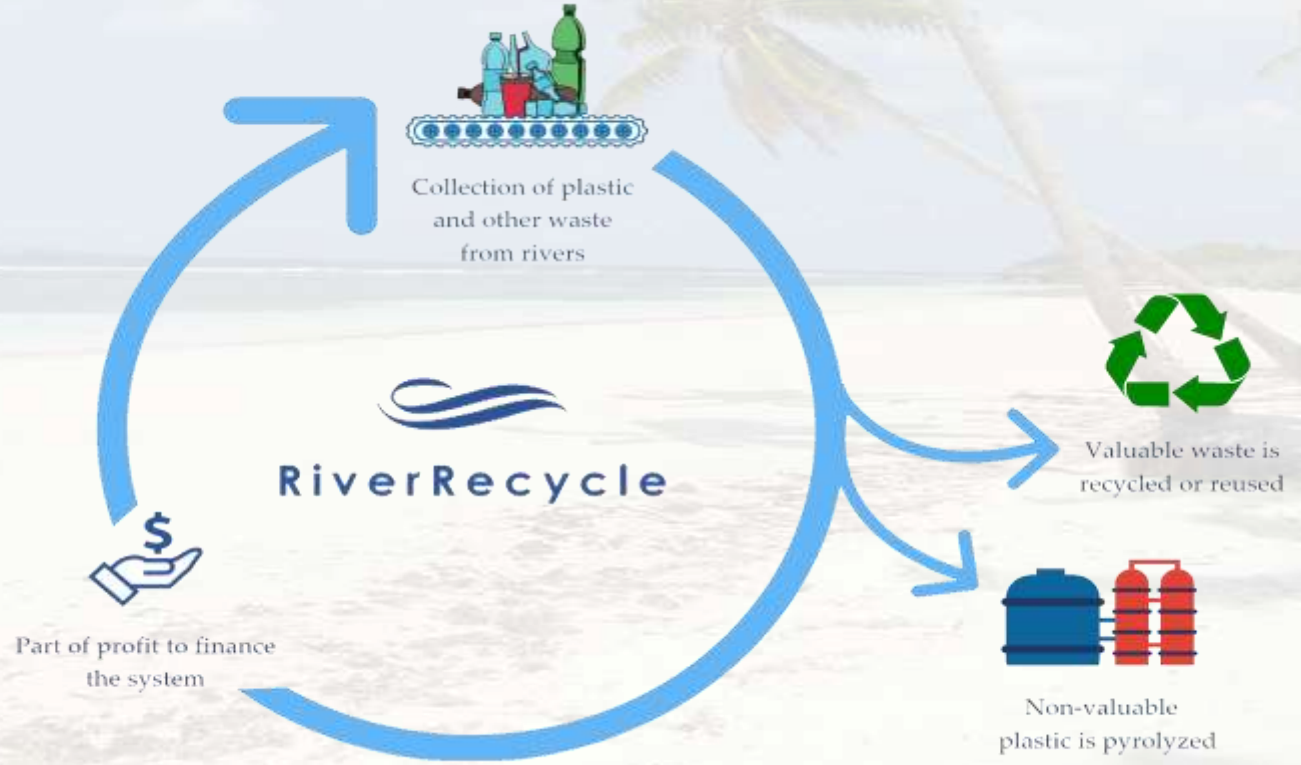


Developing an indigenous solution

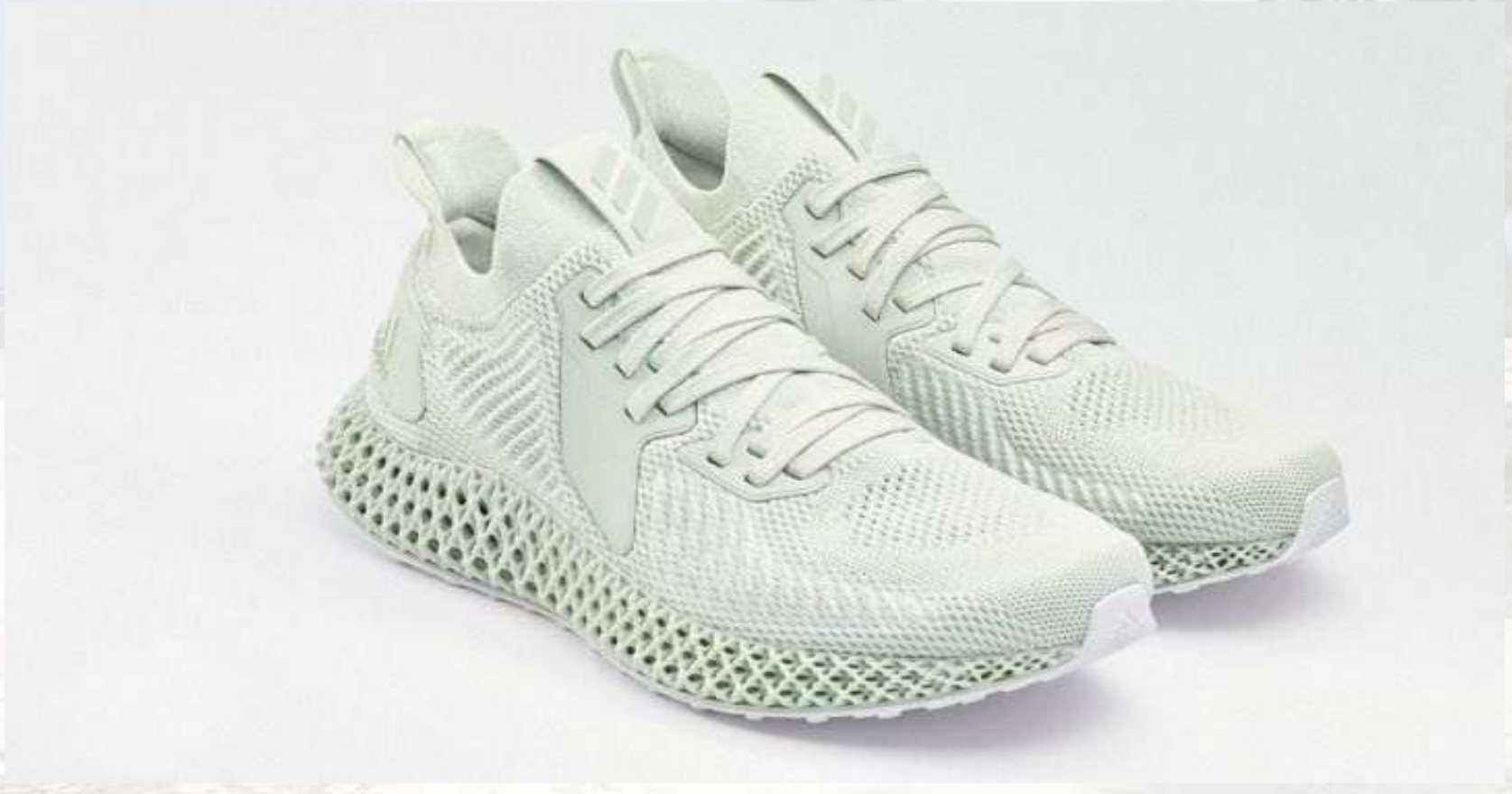
The solution ALFAMER developed was a floating trash barrier (FTB) which deployed in Cooum river in Chennai in 2017. This solution caught 22,000 tons of floating trash, of which 10 percent was plastics i.e 2200 tons of plastic in 2018 alone. Thy were able to catch 100 percent of surface plastics in this river, which was removed from the river and disposed off in an environmentally safe manner



The project started in 2021 by installing a river-based collection unit to immediately halt the plastic flow into the Indian Ocean from the Mithi river in Mumbai. A chemical recycling facility is used to create value from plastic waste that would otherwise end up in the environment



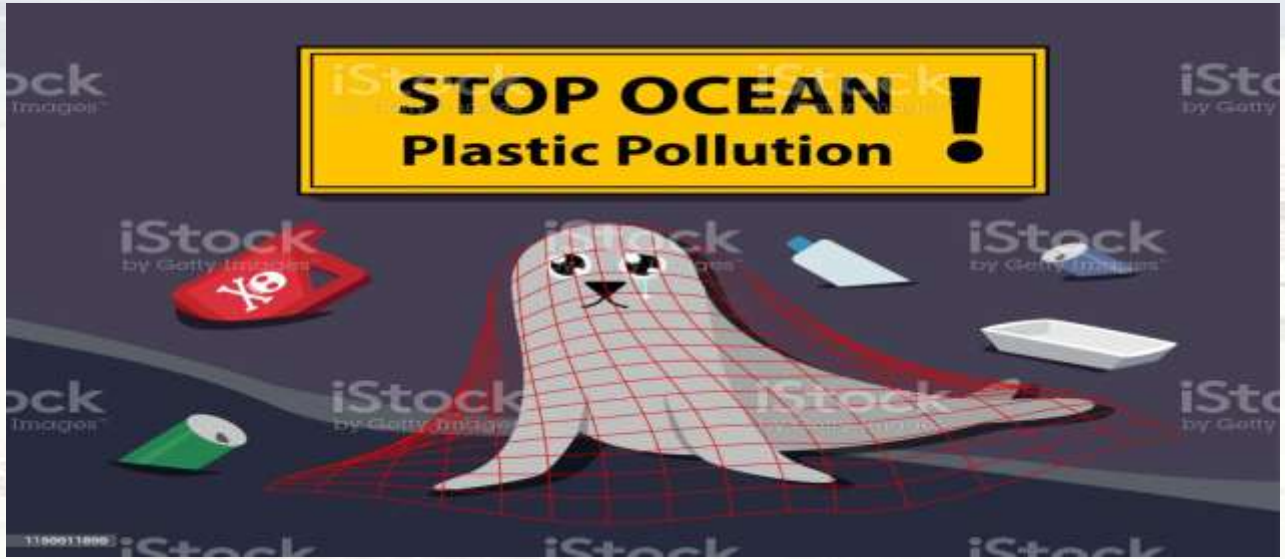
Adidas is turning plastic ocean waste into sneakers and sportswear. In 2015 Adidas partnered with Parley for the Oceans to turn marine pollution into sportswear. Adidas uses recycled plastic bottles as a replacement for virgin materials



Biodegradable alternative to plastic fishing nets reduces plastic pollution

In certain areas it is best to replace conventional plastics entirely to fight plastic pollution in the ocean. Take fishing gear such as nets, ropes and lines, for example. Each year, some 13 000 fishing nets are left at sea, lost as plastic in the ocean. However, these plastic nets do not actually disappear. They can live on for years as ocean waste: ghost nets that entangle fish and marine mammals.

The researchers at SINTEF Ocean are therefore exploring the use of biodegradable materials in gillnets to replace plastic nets and reduce plastic pollution in the ocean. The results so far are promising. Although fishing trials have shown somewhat poorer fishing efficiency than traditional nylon gillnets, the environmental benefits are great. Similar efforts to reduce plastic pollution and ocean waste are needed to continue the fight against plastic in the ocean.



PLASTICS DO NOT LITTER, PEOPLE DO…..
RECYCLING WATER OR PLASTICS WILL SOLVE ISSUES