BACKGROUND KNOWLEDGE ON OCEAN PLASTIC

plasticbank®

in partnership with:

ALLIANCE TO END PLASTIC WASTE®

in partnership with:

TABLE OF CONTENT

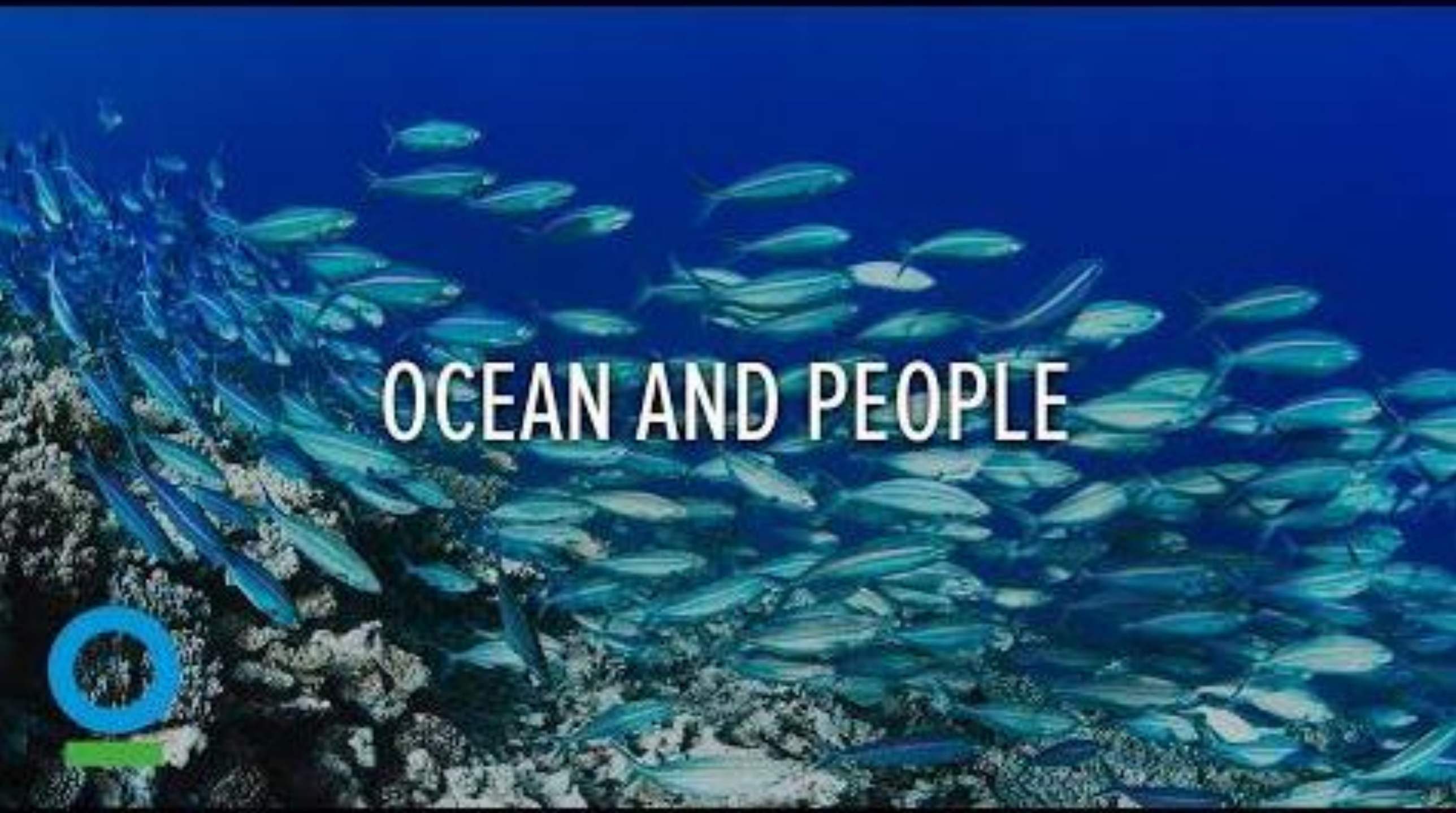
in partnership with:

A: THE BENEFITS OF HEALTHY MARINE ECOSYSTEMS

Marine biodiversity, the variety of life in the ocean and seas, is a critical factor of all three pillars of sustainable development - economic, social and environmental - supporting the healthy functioning of the planet and supplying services that underpin the health, well-being, and prosperity of humanity.

The ocean is one of the major repositories of earth's biodiversity. It constitutes over 90 percent of the habitable space on the planet and contains some 250,000 known species, with many more remaining to be discovered. (Source: UN)

Marine ecosystems provide numerous resources that are beneficial to humankind and a significant proportion of the world's population relies intimately on the oceans and coasts for survival and well-being.


OCEAN AND PEOPLE

in partnership with:

A: THE BENEFITS OF HEALTHY MARINE ECOSYSTEMS

1. **Biodiversity -** The ocean is home to the largest animal that has ever lived on Earth – the blue whale – and to the tiny krill that it eats.
2. **Nutrition -** Fish and seafood are the main sources of protein for more than a 3 billion of us. But the oceans provide far more than food. (Source: WWF)
3. **Livelihood -** Globally, over 700 million people depend on fishing for their livelihoods. (Source: WWF)
4. **Drinking water** - Oceans provide evaporated water to the water cycle, which is the basis for rain. The rain then fills the groundwater from where we get our water to drink.
5. **Air that we breathe** - Scientists estimate that 50-80% of the oxygen production on earth comes from the oceans. The majority of this production is from oceanic plankton — drifting plants, algae, and some bacteria that can photosynthesize. (Source: NOAA)
6. **Reducing climate change -** The ocean reduces climate change by absorbing greenhouse gas emissions. It also works like an A/C and help planet earth to absorb some of the additional heat. Covering 70 percent of the earth's surface, the ocean transports heat from the equator to the poles, regulating the earth's climate and weather patterns. (Source: EPA)
7. **Ocean keeps us happy and healthy-** The ocean has a great recreational value.
   We can relax, play, swim, snorkel or ride on a boat. We all need some fun and relaxation for our mental well-being.

in partnership with:

A: THE BENEFITS OF HEALTHY MARINE ECOSYSTEMS

The benefits of healthy marine ecosystems:

- Biodiversity
- Nutrition
- Livelihood
- Oxygen
- Drinking water
- Coping with climate change
- Keeping us happy and healthy

Isn't it amazing that the ocean gives us all those benefits for free? So now, you understand better and can explain to your students why it is important to keep the ocean healthy and free of plastic pollution.

in partnership with:

B: OCEAN PLASTIC

NEGATIVE EFFECTS OF PLASTIC POLLUTION ON THE MARINE ECOSYSTEM

Despite its irreplaceable value, the ocean is under threat. If we carry on the way we treat the ocean as we do now, fish and other marine animals could be overfished, habitats such as coral reefs will suffer, and so will the marine life that depends on it. There could be more plastic in the ocean than fish by 2050. (Source: BBC)

Around eleven billion kilograms of plastic flow into the ocean yearly. In other words, every minute, the equivalent of a garbage truck filled with plastic is dumped into the sea. (Source: UNEP)

Over 80% of ocean plastic waste actually comes from all of us on land. Our mismanaged plastic waste eventually finds its way to the sea through the waterways - sewers and rivers! (Source: Ecowatch)

About 80-90% of plastic pollution in the ocean comes from single-use plastic. (Source: UNEP)

Ocean plastic can harm marine life. Animals can become entangled in plastic bags, bottles, rings, and ropes. Frequently, plastic is also accidentally eaten by many species, including seabirds, fish, whales, and sea turtles, which often mistake plastic bags for jellyfish.

B: OCEAN PLASTIC

NEGATIVE EFFECTS OF PLASTIC POLLUTION ON THE MARINE ECOSYSTEM

B: OCEAN PLASTIC

NEGATIVE EFFECTS OF PLASTIC POLLUTION ON THE MARINE ECOSYSTEM

in partnership with:

plasticbank®

ALLIANCE TO END PLASTIC WASTE®

B: OCEAN PLASTIC

NEGATIVE EFFECTS OF PLASTIC POLLUTION ON THE MARINE ECOSYSTEM

Over time, because of the heavy waves and strong sun, single-use plastic breaks down into tiny - 1cm or smaller - pieces called microplastics and they are mistaken for food by seabirds, fish, and other sea creatures.

in partnership with:

B: OCEAN PLASTIC

GENERAL KNOWLEDGE ON PLASTIC

Plastic was invented in the 19th century and started to be commonly widespread in the second half of the 20th century, because of their low weight, flexibility, affordability and durability. However, the long-lasting qualities of plastic and its toxicity pose an enormous threat. They tend to pollute our environment for centuries. (Source: sciencemuseum.org.uk)

The main ingredients to make plastics are crude oil, coal, and natural gas, which are all fossil materials (materials that had been formed through decomposition and compaction of plant and animal remains of the prehistoric age). (Source: plasticseurope.org)

Those raw materials are refined to get rid of unwanted particles. After that, they undergo a process called polymerization where their molecules are bound together through chemical reactions so tightly like nothing else in nature. That is why plastic becomes an artificial matter (non-organic) and therefore it is not able to naturally decompose. The different polymers are melted, mixed, and turned into pellets that can be molded into different items as needed by the manufacturer. (Source: bpf.co.uk)

in partnership with:

plasticbank®

ALLIANCE TO END PLASTIC WASTE®

B: OCEAN PLASTIC

Single-Use Plastic Bags

in partnership with:

plasticbank®

ALLIANCE TO END PLASTIC WASTE®

B: OCEAN PLASTIC

SINGLE-USE PLASTIC EXAMPLE

Plastic Bottles (Beverages)

Transparent

Light blue

White

Green

Dark blue

in partnership with:

B: OCEAN PLASTIC

SINGLE-USE PLASTIC EXAMPLE

Plastic Bottles (Cosmetics)

Lotion plastic bottles

Tubes

Shampoo plastic bottles

in partnership with:

plasticbank®

ALLIANCE TO END PLASTIC WASTE®

B: OCEAN PLASTIC

SINGLE-USE PLASTIC EXAMPLE

Plastic Straws

in partnership with:

plasticbank®

ALLIANCE TO END PLASTIC WASTE®

B: OCEAN PLASTIC

SINGLE-USE PLASTIC EXAMPLE

Plastic Cups

In Partnership with:

plasticbank®

ALLIANCE TO END PLASTIC WASTE®

in partnership with:

plasticbank®

ALLIANCE TO END PLASTIC WASTE®

B: OCEAN PLASTIC

SINGLE-USE PLASTIC EXAMPLE

Take Away Food Containers

Thin clear salad/fruit bowl

Styrofoam

in partnership with:

plasticbank®

ALLIANCE TO END PLASTIC WASTE®

B: OCEAN PLASTIC

SINGLE-USE PLASTIC EXAMPLE

Plastic Packaging

Rice packaging paper

Bubble wrap

Snack plastic packaging & sachets

in partnership with:

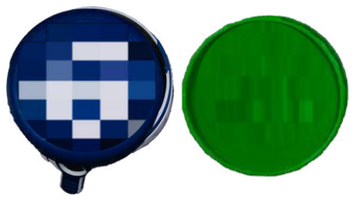
B: OCEAN PLASTIC

SINGLE-USE PLASTIC EXAMPLE

Other Single-Use Plastic

Other single-use plastic

Ziplock bag



Water gallon cap

in partnership with:

plasticbank®

ALLIANCE TO END PLASTIC WASTE®

B: OCEAN PLASTIC

SINGLE-USE PLASTIC EXAMPLE

Other Single-Use Plastic

Diapers

Sanitary pads and tampons

in partnership with:

plasticbank®

ALLIANCE TO END PLASTIC WASTE®

B: OCEAN PLASTIC

Isn't it sad that most of the plastic that we use only once, sometimes just for a little while, can impact our environment for centuries? Now you are equipped to explain to your students what causes ocean plastic.

C: SOLUTIONS TO STOP OCEAN PLASTIC

THE WRONG SOLUTIONS

in partnership with:

plasticbank®

ALLIANCE TO END PLASTIC WASTE®

in partnership with:

C: SOLUTIONS TO STOP OCEAN PLASTIC

THE WRONG SOLUTIONS

1. **Burning plastic waste**
   When we burn plastic waste, it releases toxic substances into the atmosphere and into your lungs and body. These toxins seriously affect human health. The most dangerous are dioxins which, can cause cancer, reproductive and developmental problems, damage to the immune system, and can interfere with hormones.(Source: WHO) The same health hazards occur if we burn plastic waste on a larger scale in industrial waste incinerators. (Source: National Geographic)

1. **Burying plastic waste**
   By burying plastics, you may hide them from plain sight, but since they cannot biodegrade (like organic waste, for example, banana peels) it will pollute the soil and plants growing on it for a thousand years to come. It will also pollute the groundwater, a source of drinking water. (Source: UNEP)

1. **Sending plastic waste to landfills**
   Sending plastic waste to landfills is an example of linear economy, an unsustainable way to treat resources. It should be the last choice only if you cannot, reduce, reuse and recycle plastic waste. The waste will be brought to a waste dump or a municipal landfill. There, the plastic will react with organic waste and create large amounts of greenhouse gases that cause climate change (think about extreme weather). Moreover, the toxic runoff pollutes the surrounding environment and affects our groundwater. By accumulating the waste today, we only hand over the problem to the next generations. (Source: UNEP)

in partnership with:

C: SOLUTIONS TO STOP OCEAN PLASTIC

THE WRONG SOLUTIONS

4. **Using bioplastic - PLA** (Poly Lactic Acid)

Another solution might seem to be the use of bioplastic, a material made from plants (corn, sugarcane, beetroot, cassava, etc.) instead of petroleum. Sugar from biological material is processed into a chemical compound (polylactic acids - PLA) that is similar to plastic.

The problem is that bioplastics won't degrade on their own, neither in landfills nor your home compost heap, because they need to be heated to a high temperature that allows microorganisms to break them down. Such intense heat can be created only in specialized industrial composting facilities.

If bioplastics end up in marine environments, they have similarly negative effects like petroleum-based plastic, breaking down into micro-sized pieces, lasting for centuries, and posing a huge threat to marine life. Also, growing crops for the bioplastic diverts land from food production, using a substance like corn for plastic instead of food. Growing crops on an industrial scale also involves the usage of heavy chemical fertilizers which cause further pollution to the environment.

Bioplastic is just another buzzword that steers our attention away from the real solution – to reduce single-use plastic. (Source: National Geographic)

in partnership with:

C: SOLUTIONS TO STOP OCEAN PLASTIC

3 Rs to Stop Ocean Plastic

1. Reduce
2. Reuse
3. Recycle

in partnership with:

C: SOLUTIONS TO STOP OCEAN PLASTIC

1. REDUCE

There are recyclable single-use plastic. When not necessary, we can **reduce** our consumption by bringing reusable alternatives such as cups, bottles, and bags.

On the other hand, there are single-use plastic that cannot be recycled at all! So we must completely **refuse** items packed in styrofoam boxes, kertas nasi, sachets (choose bigger items if possible), and straws (we can drink without them).

in partnership with:

plasticbank®

ALLIANCE TO END PLASTIC WASTE®

C: SOLUTIONS TO STOP OCEAN PLASTIC

EXAMPLES OF RECYCLABLE PLASTIC TO REDUCE

1 PET

Transparent

Light blue

White

Green

Dark Blue

2 HDPE

Lotion plastic bottle & tube

Shampoo plastic bottle

Milk/yogurt Plastic bottle

Plastic bottle ring & cap

4 LDPE

Plastic bags

Water gallon cap

Bread Packaging

Ziplock bag

Bubble wrap

5 PP

Plastic cup

Thin clear salad/fruit bowl

in partnership with:

plasticbank®

ALLIANCE TO END PLASTIC WASTE®

C: SOLUTIONS TO STOP OCEAN PLASTIC

EXAMPLES OF NON-RECYCLABLE PLASTIC TO REDUCE

Styrofoam

Rice packaging paper

Drinking plastic straws

Other single-use plastic

Snack plastic packaging & sachets

in partnership with:

C: SOLUTIONS TO STOP OCEAN PLASTIC

2. REUSE

a) Reuse single-use plastic to extend their lifecycle:
   - Reuse as they are - for example, reuse plastic bags to carry shoppings
   - Upcycle (increase the economic value)- for example, use sachets to make a purse
   - Downcycle (decrease the economic value)- for example, use plastic cup as a flower pot

a) Choose single-use plastic alternatives. Always pack a reusable kit that you can bring wherever you go – a tote bag, a water tumbler, lunch boxes, stainless cutleries, etc.

in partnership with:

plasticbank®

ALLIANCE TO END PLASTIC WASTE®

C: SOLUTIONS TO STOP OCEAN PLASTIC

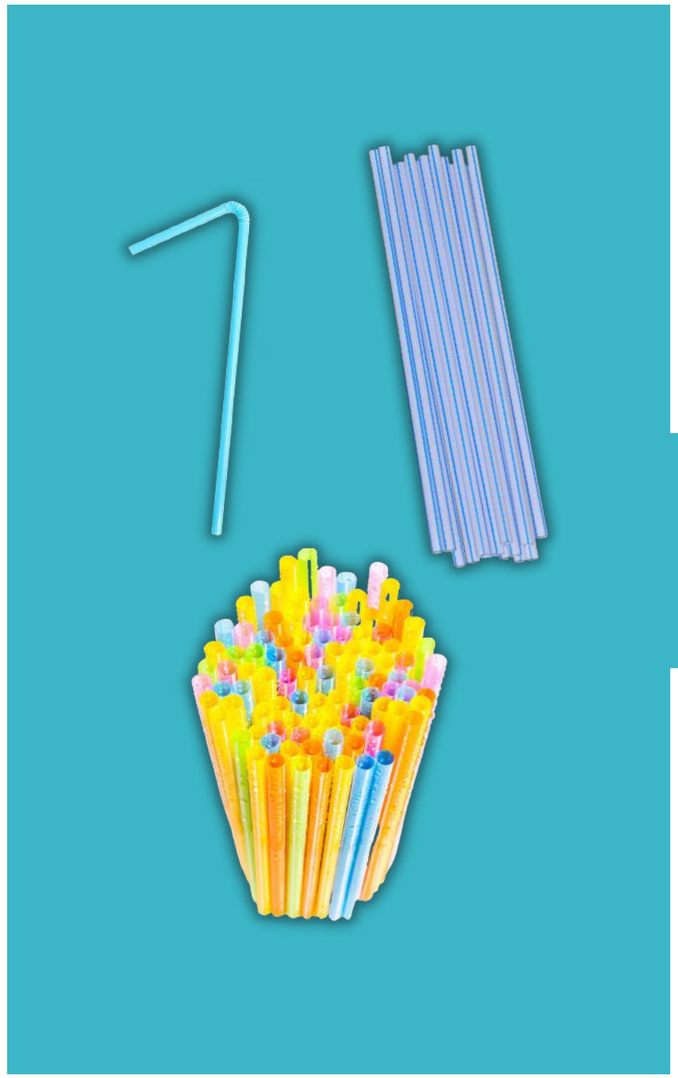
REUSABLE EXAMPLES

Reusable Bags

in partnership with:

C: SOLUTIONS TO STOP OCEAN PLASTIC

REUSABLE EXAMPLES



Reusable stainless, glass & bamboo straws

in partnership with:

C: SOLUTIONS TO STOP OCEAN PLASTIC

REUSABLE EXAMPLES

Reusable Bottle

in partnership with:

plasticbank®

ALLIANCE TO END PLASTIC WASTE®

C: SOLUTIONS TO STOP OCEAN PLASTIC

REUSABLE EXAMPLES

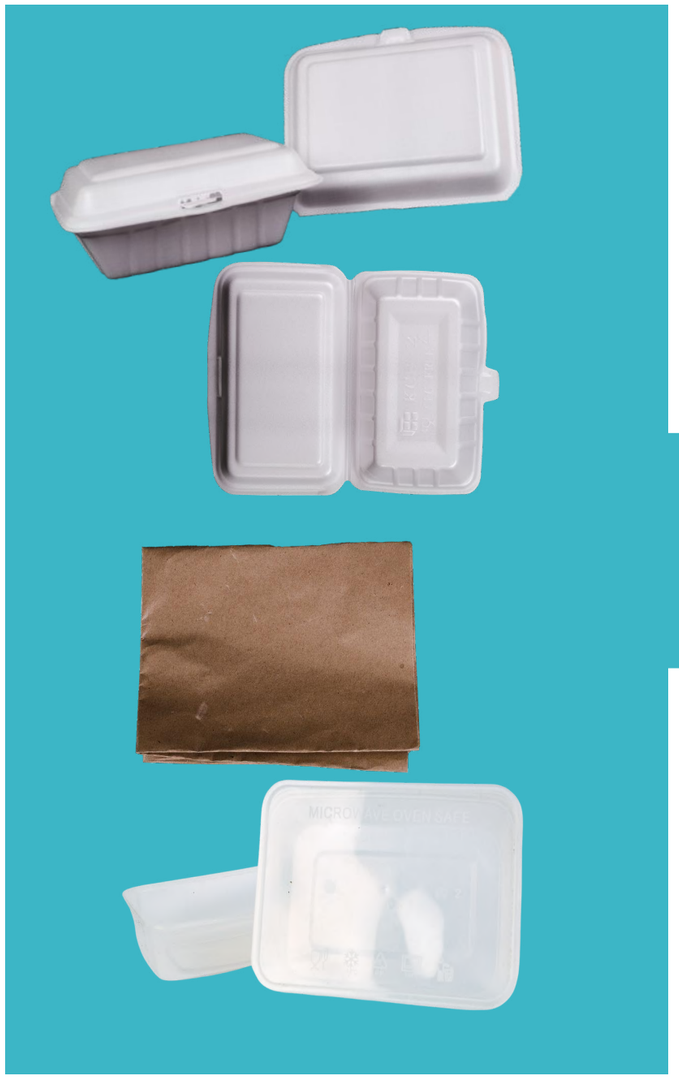
Reusable Cup

Reusable Bottle

in partnership with:

C: SOLUTIONS TO STOP OCEAN PLASTIC

REUSABLE EXAMPLES



Reusable Lunchbox / Food Containers

in partnership with:

C: SOLUTIONS TO STOP OCEAN PLASTIC

REUSABLE EXAMPLES

Reusable/Washable Diapers

Reusable Menstrual Cups and Pads

in partnership with:

C: SOLUTIONS TO STOP OCEAN PLASTIC

CIRCULAR ECONOMY

The majority of how we treat our resources is based on the **linear economy** - it is a very wasteful system. The example of linear system would be sending our waste to landfills.

In opposite, the **circular economy** tries to mimic nature - waste becomes a resource, and there is no waste. It's a perfect system.

The circular economy is a system where we eliminate waste and promote a continual use of resources. The example would be recycling.

C: SOLUTIONS TO STOP OCEAN PLASTIC

CIRCULAR ECONOMY

C: SOLUTIONS TO STOP OCEAN PLASTIC

3. RECYCLE

If we can not reduce single-use plastic and reuse tumblers, tote bags, lunch boxes, etc., then the last option in order to keep single-use plastic away from our ocean is to choose plastic that can be recycled.

The faculty, students and their families can collect, separate, and bring to school plastic that can be recycled through the Plastic Bank school collection branch.

C: SOLUTIONS TO STOP OCEAN PLASTIC

3. RECYCLE

in partnership with:

plasticbank®

ALLIANCE TO END PLASTIC WASTE®

C: SOLUTIONS TO STOP OCEAN PLASTIC

RECYCLABLE PLASTIC

1 PET

Transparent

Light blue

White

Green

Dark blue

in partnership with:

plasticbank®

ALLIANCE TO END PLASTIC WASTE®

C: SOLUTIONS TO STOP OCEAN PLASTIC

RECYCLABLE PLASTIC

2 HDPE

Lotion plastic bottle & tube

Shampoo plastic bottle

Milk/yogurt Plastic bottle

Plastic bottle ring & cap

in partnership with:

plasticbank®

ALLIANCE TO END PLASTIC WASTE®

C: SOLUTIONS TO STOP OCEAN PLASTIC

RECYCLABLE PLASTIC

4 LDPE

Plastic bags

Water gallon cap

Ziplock bag

Bread packaging

Bubble wrap

in partnership with:

plasticbank®

ALLIANCE TO END PLASTIC WASTE®

C: SOLUTIONS TO STOP OCEAN PLASTIC

RECYCLABLE PLASTIC

5 PP

Plastic cup

Thin clear salad/fruit bowl

in partnership with:

Non-Recyclable Single-Use Plastics

Styrofoam

Rice packaging paper

Drinking plastic straws

Other single-use plastic

Snack plastic packaging & sachets

RECAP 3R

In order to protect our ocean from single-use plastic pollution we need to:

1. First, **REDUCE** single-use plastic. When not necessary, we can **reduce** our consumption by bringing reusable alternatives such as cups, bottles, and bags.
    a. On the other hand, there are single-use plastic that cannot be recycled at all! So we must completely refuse those items. For example items packed in styrofoam boxes, kertas nasi, sachets (choose bigger items if possible), and straws (we can drink without them).

2. Second, **REUSE** single-use plastic or buy reusable replacements. Always pack a reusable kit that you can bring wherever you go, such as reusable water bottle, reusable lunch box, reusable tote bag, reusable cutlery, and reusable straw.

3. Lastly, always make sure you **RECYCLE**. Collect, separate, and bring to school plastic that can be recycled at your school's Plastic Bank collection branch. The recyclable plastics are:

Isn't it great that we have so many solutions available?

Now you are equipped to teach your students how to stop ocean plastic!

D: ABOUT PLASTIC BANK

in partnership with:

D: ABOUT PLASTIC BANK

Plastic Bank was founded by two Canadians, David Katz and Shaun Frankson, to prevent the flow of plastic waste into the ocean and alleviate poverty.

The social enterprise builds ethical plastic collection communities within 50 kilometers of coastlines and waterways. Plastic Bank collection community members gather plastic waste and exchange the materials at local collection branches for life-improving benefits – such as access to health, work and life insurance, digital connectivity, and social and fintech services. Exchanges are secured through a blockchain platform that enables traceable collection, secures income, and verifies reporting.

Collected material is processed into Social Plastic® feedstock for reuse in products and packaging – thus helping create new life for old plastic.

Plastic Bank has spurred a global movement of Ocean Stewardship, engaging all sectors of society: businesses, schools, faith communities, government and civic groups to change the way in which we view and use plastic, not as trash, but as a resource.

CONTACT US

Plastic Bank Indonesia
Jalan Pantai Berawa No. 150 B, Tibubeneng,
Kuta Utara, Badung, Bali, Indonesia

Hotline: 0813-3851-5155

Follow us

@plasticbankindonesia