

Explanatory text for the push “Plastic pollution and climate change”

Key messages:

- **Plastic pollution contributes to climate change, and climate change increases plastic crisis**
- **One of the critical consequences of plastic pollution is the reduction of the ocean's ability to store CO₂.**
- **Reducing the production and consumption of plastic is an effective measure to reduce climate change.**

Plastic waste and climate change are often viewed as two separate entities, but a 2019 study published in the journal *Science of the Total Environment* suggests¹ that the two issues are fundamentally linked.

According to the researchers, every aspect of plastic use, from its production to waste, generates some form of harmful greenhouse gases that significantly contribute to climate change and global warming.

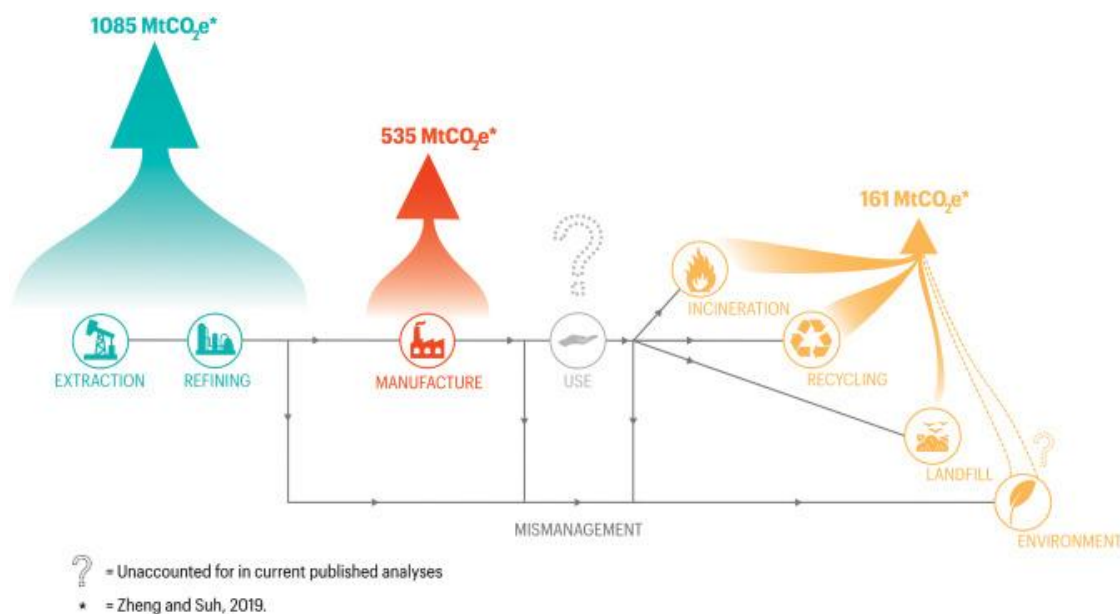
Plastic pollution make climate crisis worth

Plastics are making it harder for the world to keep global temperatures from rising above 1.5°C because they release greenhouse gases (GHGs) throughout their life cycle. 99 percent of plastic manufactured today comes from fossil fuels. Extracting, refining, and manufacturing plastics, transportation and disposal all produce a lot of carbon emissions. In 2015, plastic production emitted 1.96 gigatons of CO₂ and other GHGs, costing \$341 billion annually. When plastic waste is burned, it releases more GHGs and toxic pollutants. Even recycling and other disposal methods generate emissions. The rapid growth of the plastic industry, mainly driven by natural gas, hampers efforts to cut carbon pollution and prevent climate disaster.

¹ [The fundamental links between climate change and marine plastic pollution](#)

By 2050, GHG emissions from plastics could account for about 13% of the remaining carbon budget². Without limiting plastic production, emissions could rise to 4.3 gigatons of CO₂.

Interesting fact: Under the influence of solar radiation, plastic releases greenhouse gases methane and ethylene, and over time, the volumes of emissions increase. Particularly dangerous are plastic bags, which in large quantities contain polyethylene - one of the most active sources of methane and ethylene. According to estimates, since 1950, more than eight billion tons of plastic bags have been produced. It is expected that in the next 20 years, their annual production will double.



The Plastic Lifecycle. Schematic representing the estimated amounts of greenhouse gases released in CO₂e at each stage of the plastic life cycle. The amount stored during use and released when plastic ends up in the natural environment is largely unknown. Data taken from [Zheng and Suh \(2019\)](#).

² [Plastic & Climate: The Hidden Costs of a Plastic Planet](#)

Plastics in the Baltic Sea may significantly reduce the sea's ability to absorb CO₂, which worsens climate change.

The global ocean, and its various parts, including the Baltic Sea play a crucial role in regulating the Earth's climate by acting as a major carbon sink, absorbing approximately 25% of the CO₂ emitted by human activities. However, the presence of plastics disrupts this vital function in several ways.

First, microplastics can be ingested by marine organisms, including plankton, fish, and even larger marine mammals. These organisms are essential to the ocean's carbon cycle, as they contribute to the biological carbon pump, where CO₂ is absorbed during photosynthesis and then transported to deeper waters when these organisms die and sink. When marine life is affected by plastic ingestion, their ability to carry out these processes effectively is compromised, leading to a decrease in overall carbon absorption.

Second, plastics can alter the chemical composition of seawater. For instance, they can affect the pH levels and increase the acidity of the water. As the ocean becomes more acidic due to both plastic pollution and increased CO₂ absorption, marine ecosystems, including coral reefs and shellfish, are put under stress. These ecosystems are crucial for supporting marine biodiversity and also play a role in sequestering carbon. When these systems are damaged, their ability to store carbon is diminished, further reducing the ocean's capacity to absorb CO₂.

Additionally, the accumulation of plastic debris can create physical barriers in marine environments, affecting the distribution and health of marine plants and organisms. Seagrasses and other aquatic plants, which are vital for carbon sequestration, may struggle to thrive in areas heavily polluted with plastics. This not only impacts local ecosystems but also contributes to the overall decline in the ocean's capacity to mitigate climate change.

5 ways how climate change makes plastic pollution worse

1. **Microplastic Formation.** A warmer climate speeds up the breakdown of plastics into smaller pieces, which increases the amount of secondary microplastics.
2. **Increased Demand for Single-Use Plastics** As extreme weather events and climate-related disruptions become more frequent, there's a surge in demand for single-use plastics. These items are often perceived as convenient solutions for health and safety, especially in food packaging and medical supplies during emergencies.
3. **Urbanization and Consumerism** As populations migrate to urban areas due to climate impacts like drought or flooding, there's an increase in consumer goods, many of which are packaged in plastics. Urban lifestyles often promote convenience, leading to higher plastic use.
4. **False Solution in Plastic Production.** In response to climate change, innovations have emerged in the production of biodegradable and oxo-degradable plastics. However, new solutions often create new problems in plastics pollution. For example, oxo-degradable plastics lead to the formation of microplastics and are not recyclable.
5. **Economic Instability** Climate change can lead to economic uncertainty, pushing businesses to opt for cheaper materials. Plastics often fit this criteria, as they are generally less expensive than alternatives. This drives higher consumption despite environmental concerns.

Additional information

How climate change affects our holiday season in the Baltic Sea region from plastic perspectives (ideas for stories/reel)

- We tend to buy more beverages, and they often come in single-use plastic packaging. **Advice:** Give preferences to reusable bottles, utilize water refill points
- During hot season we tend to spend more time on the beach, which can also lead to increased beach pollution with plastic litter. **Advice:** Leave no litter on the beach. Try

to avoid small plastic items, which can be easily wasted, like plastic straws, and cutlery.

- We, obviously tend to use more sunscreen during hot season, and a lot of skin-care products contain microplastic. **Advice:** Check the content of skin-protective products, and give preferences to sunscreen without microplastic.

Additional materials

1. [Microplastics are in the air we breathe and in Earth's atmosphere, and they affect the climate](#)
2. [Plastic & Climate: The Hidden Costs of a Plastic Planet](#)
3. [Climate Impact of Primary Plastic Production](#)
4. [What do plastics have to do with climate change? | UNDP](#)
5. [The fundamental links between climate change and marine plastic pollution](#)