Plastic Pollution and the Climate Crisis

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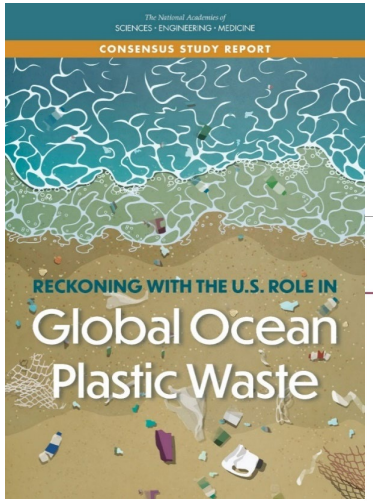
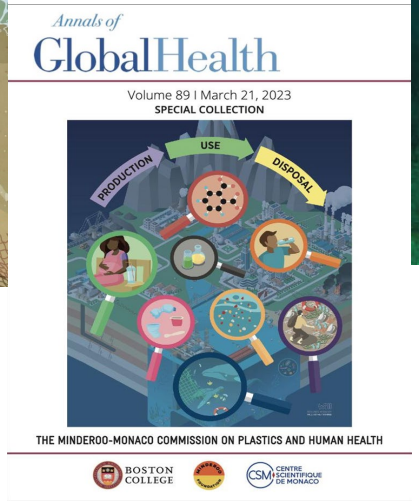
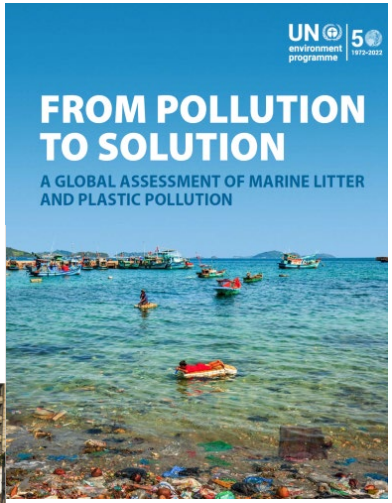
Monterey Bay Aquarium

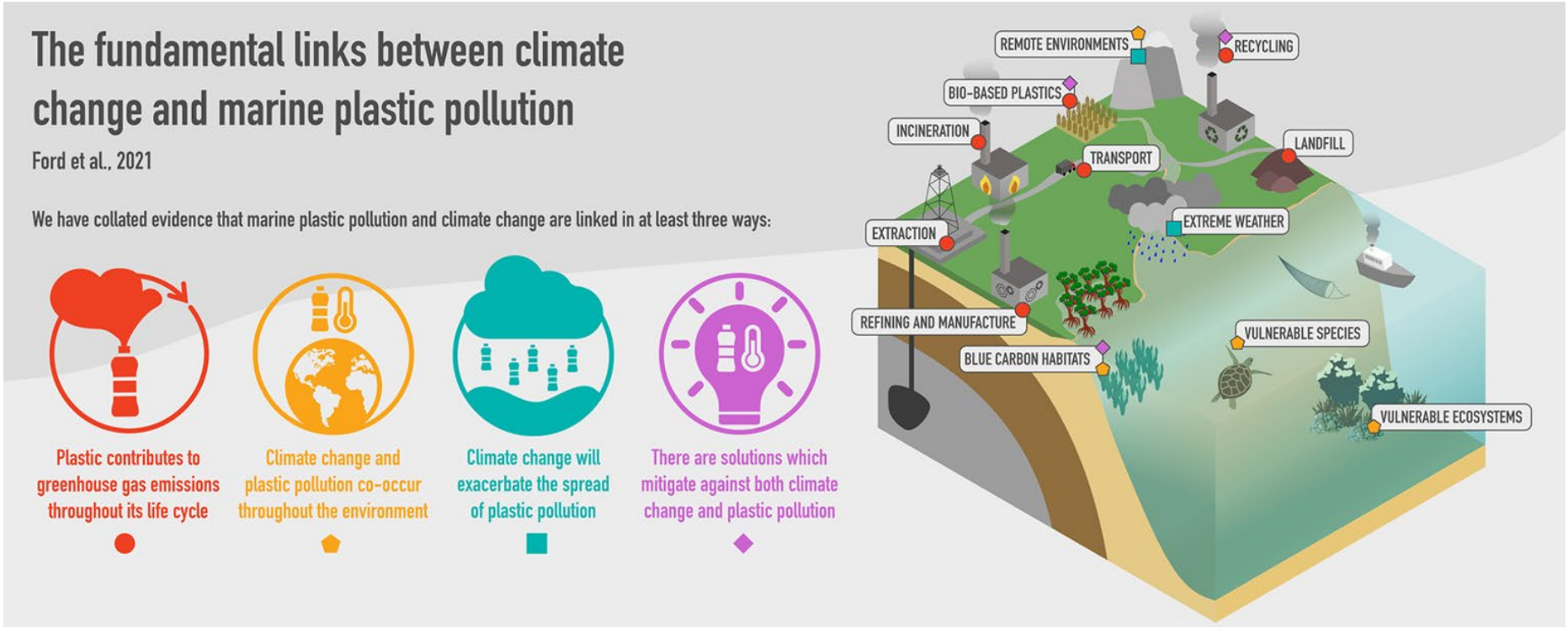
Plastic Landscape: Science and Policy Assessments







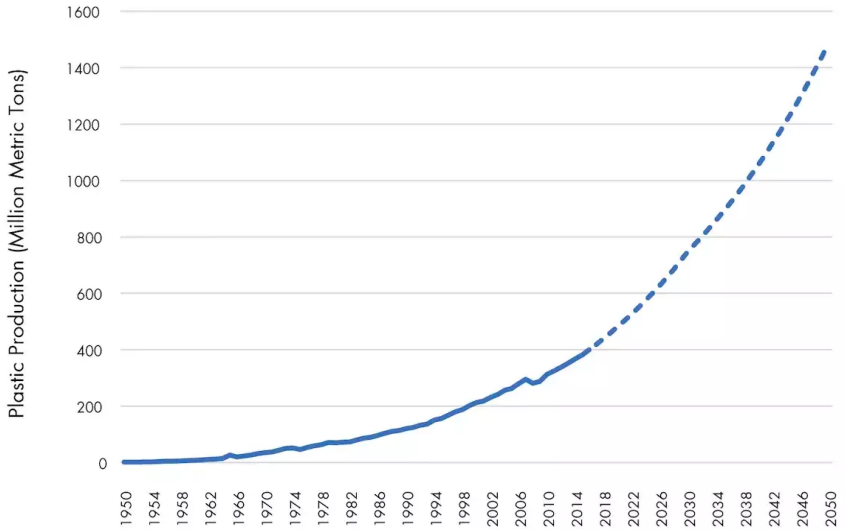
Climate and Plastic Pollution Links Being Explored

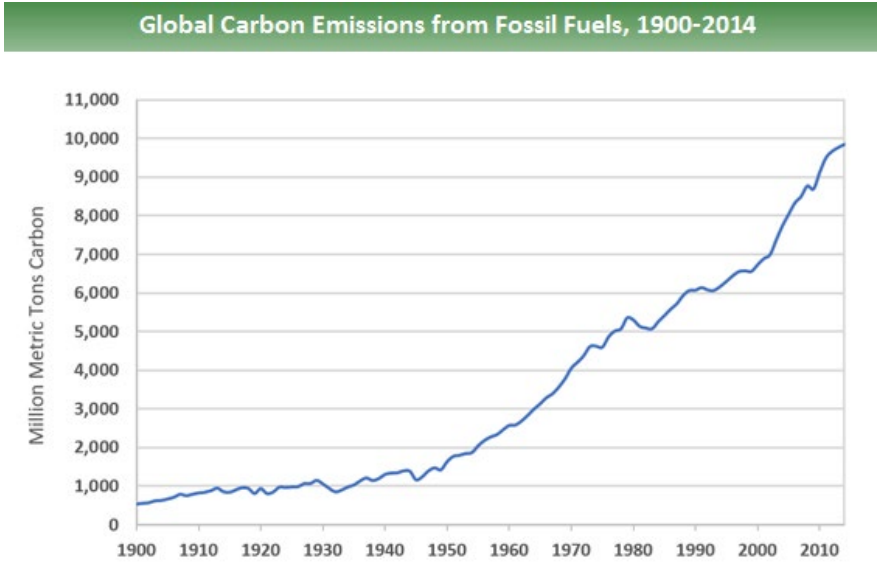


Plastic Pollution is Carbon Pollution… at a Global Scale

- Plastic is made of carbon (whether fossil-based or bio-based)
- Its carbon-carbon backbone resists degradation, leading to accumulation in the environment
- Plastics are part of - and affect - the global carbon cycle
- The plastic life cycle produces direct and indirect carbon emissions

Plastic Production & Carbon Emissions Growing, Linked



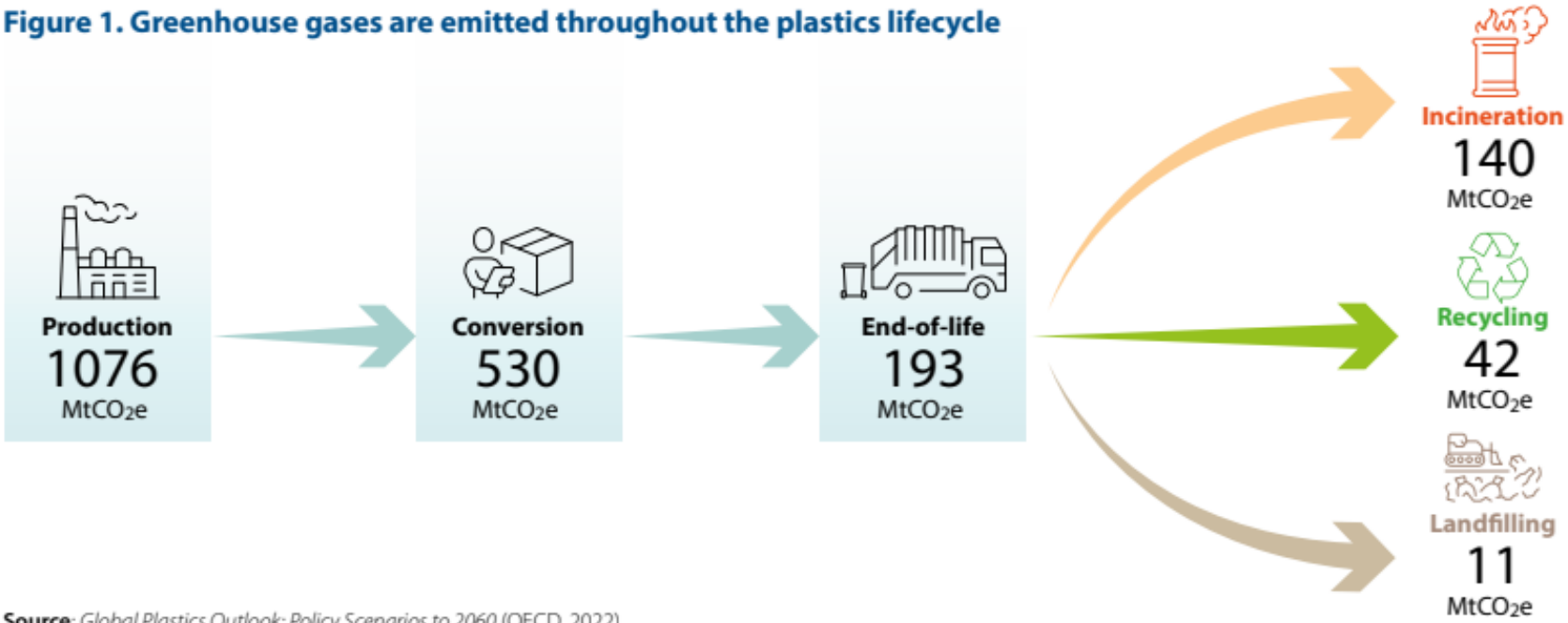


“Emissions from the petrochemicals sector are estimated to follow a growth trajectory associated with 4° C of global warming, well above the 1.5°C target set out in the Paris Agreement on Climate”

- Systemiq, ***Planet Positive Chemicals***

OECD Projects Plastic will be 4.5% of Global Emissions by 2060

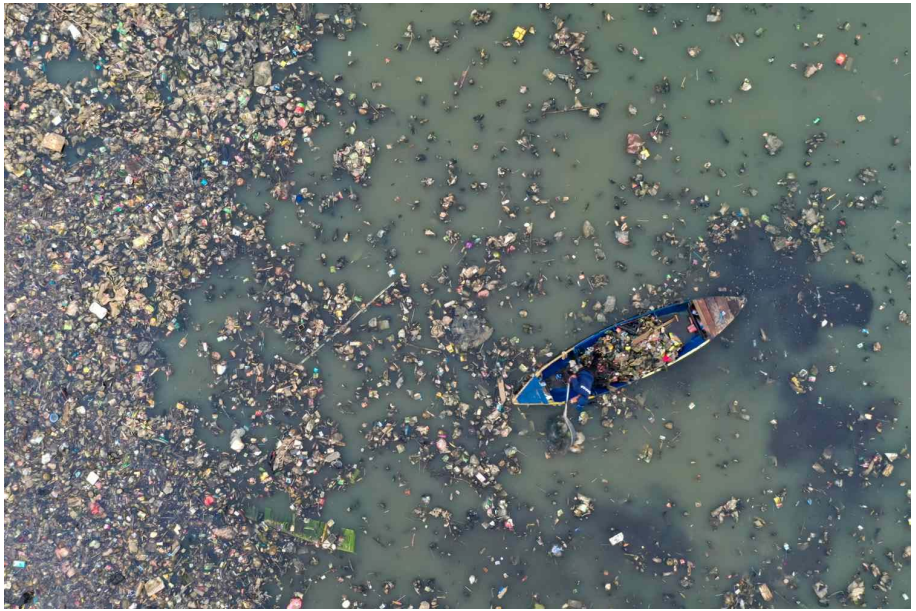
Figure 1. Greenhouse gases are emitted throughout the plastics lifecycle



Source: *Global Plastics Outlook: Policy Scenarios to 2060* (OECD, 2022).

Climate Change Exacerbates Plastic Pollution Impacts

- Microplastics are being transported through the atmosphere
- Arctic sea ice is a major microplastics sink and sea ice is melting due to warming temperatures
- Increased extreme weather events disperse mis-managed waste



Plastic Pollution Exacerbates Climate Change Impacts

- Rising sea levels and flooding
- Disruption of ecosystems
- Carbon inputs affect ocean acidification
- Degradation of natural carbon sinks and sequestration processes
    - Microplastics are harming the bacteria and plankton that sequester carbon

Both adversely impact people

- Health impacts
  - Air & water pollution
- Food & Water security
- Livelihoods
- Economic strain
  - climate change-induced disasters, such as flooding
  - Cleanup costs
- Human security
- Displacement and migration

…especially the vulnerable groups and least responsible

- Communities of color & low-income communities
- Local communities dependent on agricultural or coastal livelihoods
- Regions at higher risk are small island developing states and least developed countries

Petrochemical facilities, TX

- Plastic pollution and climate change are both being driven by fossil fuel export and plastic production
- Fenceline communities (predominantly **Black, brown, and low-income**) live in close proximity to the plants
- New facilities expected to add at least **1.1 million pounds** of CO2

Plastics “Fuel” Climate, Health, Nature Crises: What to Do?

António Guterres
@antonioguterres

Plastic pollution is more than just a waste management issue.

It is a climate issue.

It is a nature issue.

It is a health issue.

To protect people and the planet, we must #BeatPlasticPollution.

António Guterres
@antonioguterres

Plastics are fueling the climate crisis.

By 2040, up to 19% of global greenhouse gas emissions will stem from plastics.

To meet the goal of 1.5° global temperature rise & to #BeatPlasticPollution, we need a plastics treaty that reduces plastic production.

EU Strategy for Plastics Aims to Help Combat Climate

- Key element of Europe's transition towards a **carbon neutral** and circular economy
- This strategy will contribute to the Paris Climate Agreement objectives
  - Aims to reduce greenhouse gas emissions and dependence on imported fossil fuels

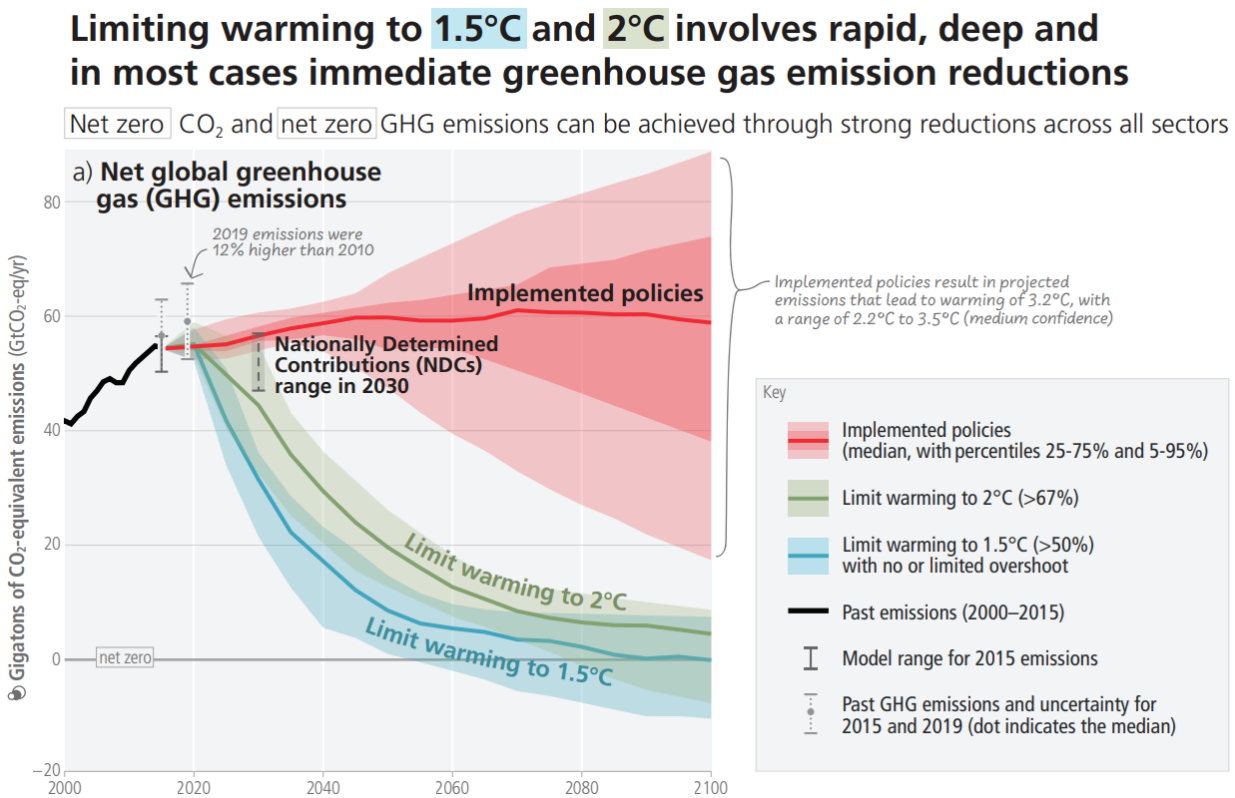
OECD 2023 Report on Climate & Plastic

- Public policies on climate and plastic have developed independently
- Policies to reduce plastic pollution have co-benefits for climate change mitigation
- Climate change mitigation policies have limited impacts on plastics use

OECD Suggestions for Tackling Both

- Strengthen the ambition of domestic policies to address plastic pollution
- Support the decarbonization of the plastics lifecycle
- Foster innovation in plastics production and waste management
- Strengthen the secondary plastic market
- Tapping into the complementarity of plastics and climate policies

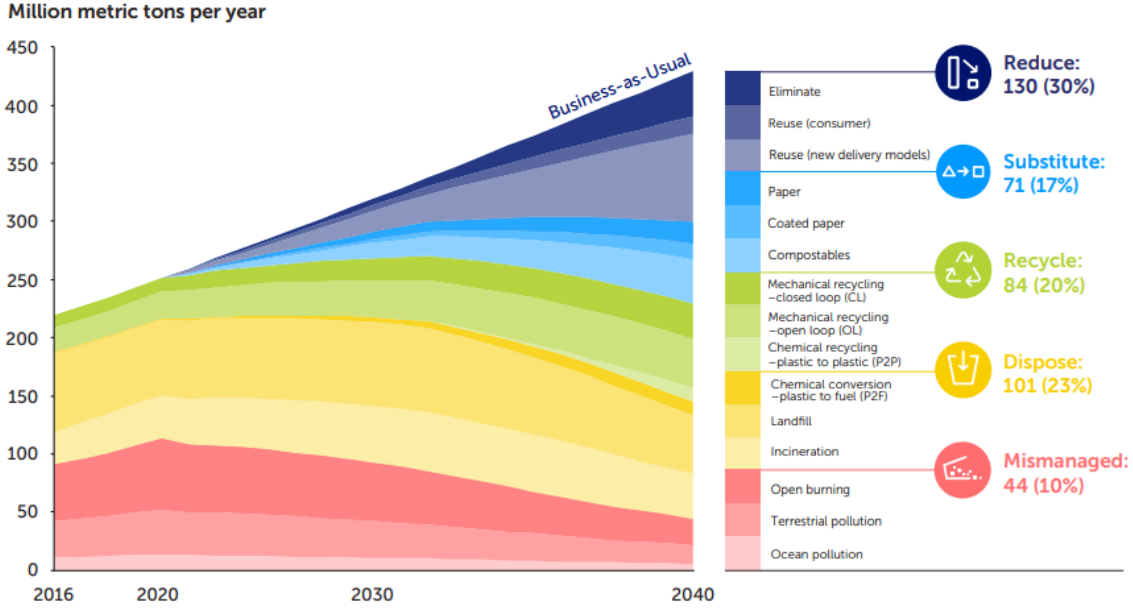
Decision Pathways for Climate: Modeling in IPCC 2023 Report



Modeling Decision Pathways to End Plastic Pollution
e.g., Pew, Systemiq, OECD, UCSB/UCB and others

Figure 5: Plastic fate in the System Change Scenario: a 'wedges' analysis

There is a credible path to significantly reduce plastic leakage into the ocean but only if all solutions are implemented concurrently, ambitiously, and starting immediately

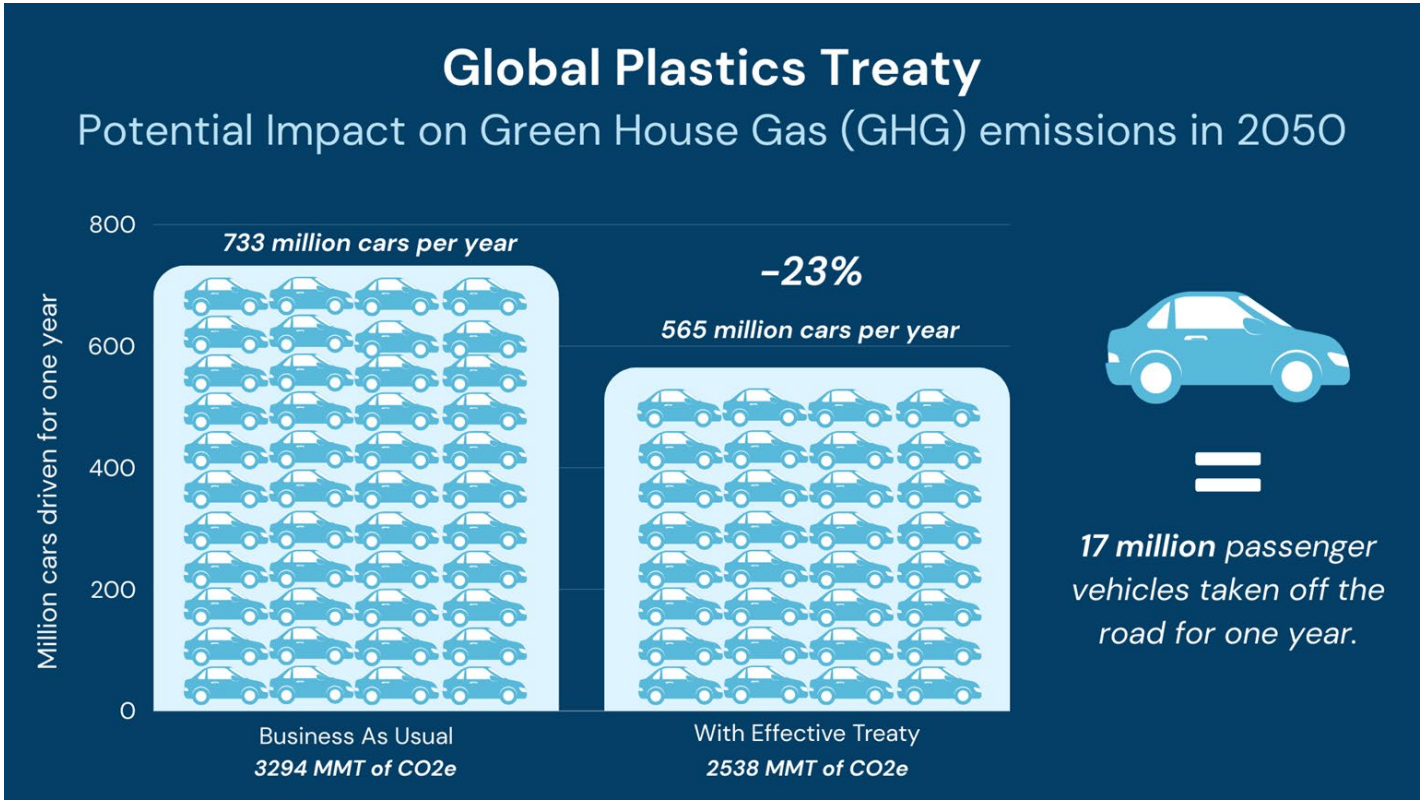


This "wedges" figure shows the share of treatment options for the plastic that enters the system over time under the System Change Scenario. Any plastic that enters the system has a single fate, or a single "wedge." The numbers include macroplastic and microplastic.

Example:
Pew & Systemiq: "Breaking the Plastic Wave: A Comprehensive Assessment of Pathways Towards Stopping Ocean Plastic Pollution" (2020)

Emerging: Projecting Plastic Contributions to Global Climate Emissions

E.g.,UCSB / UCB Global Plastics AI Policy Tool



Recognizing Risks: Carbon Disclosure Project Adds Plastics

CDP introduced a pilot questionnaire for biodiversity in 2022 and plastics in 2023.The disclosure numbers are based on companies reporting against two-thirds of the question set.

For biodiversity, 10,600+ companies (82% out of those that received the biodiversity questions) provided disclosure to at least one question and 22% (2,800 companies) disclosed against all biodiversity questions.

For plastics, 3,162 companies disclosed plastic-related data in 2023 (66% of those that received the plastics questions), with 2,920 companies (61%) responding to at least two thirds of the questions and 50% responded to all questions.

Plastic and Climate Interventions Can Be Aligned

- Decarbonize (renewables)
- Reduce production, consumption (circularity) e.g., reuse & refill
- Limit emissions/leakage, all stages
- Set polluter/producer responsibility
- Recognize, calculate social cost, risk
- Employ nature-based solutions
- Use Science: assess, model, evaluate
- *Reduction Goals, Targets, Timelines*

Sources & Links

- "What we do" – Monterey Bay Aquarium's plastic pollution page
- NASEM report: *Reckoning with the U.S. Role in Global Ocean Plastic Waste*
- *The Minderoo-Monaco Commission on Plastics and Human Health*
- International Science Council: Plastic Policy Brief
- UNEP report: *From Pollution to Solution*
- OECD Climate Plastic report
- EU Plastics Strategy
- GRID Arendal Climate Impacts Of Plastics
- *The fundamental links between climate change and marine plastic pollution*
- Pew & Systemiq report: *Breaking the Plastic Wave*
- UCSB & UCB Global Plastic Policy Tool
- Carbon Disclosure Project: Plastic

Thank you!

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