FALSE SOLUTIONS TO THE PLASTIC POLLUTION CRISIS

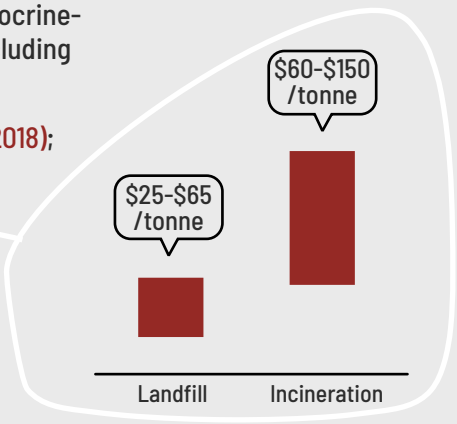
It is a common myth that the plastic pollution crisis is solely a waste management problem. This narrative points the finger at leakages from waste management systems in Global South countries, and often asserts the need for technological fixes, such as waste-to-energy incineration and chemical processing of plastic waste. Unfortunately, even the most modern waste management systems cannot cope with the exponential rise of plastic production and waste. Overproduction of plastic also puts an extra burden on municipalities, forcing them to manage increasing quantities of plastic, most of which is not recyclable. Any responses that prioritize end-of-pipe technology over addressing the root cause will not only be futile but also increase emissions of toxic and climate pollutants to the environment.

Linear economy

Perpetuates plastic production

Incineration:
"waste-to-energy," co-incineration in cement kilns and other industrial boilers, refuse-derived fuel

- Not climate-friendly: burning **one tonne** of plastic emits nearly **3 tonnes** of CO_2 (Material Economics, 2018)
- Toxic hazard: emits toxicants including cancer-causing, endocrine- and immune-disrupting dioxins and furans; heavy metals including mercury, cadmium and lead; particulate matter (GAIA, 2019)
- Incineration is more expensive than landfilling (World Bank, 2018); aging incinerators require significant additional public funds for upgrades (The New School, 2019)
- Socio-economic and racial injustice: facilities are disproportionately sited in low-income and marginalized communities (The New School, 2019)
- Competes with and undermines mechanical recycling (Nordic Council of Ministers, 2019)



Plastic-to-fuel:
gasification, pyrolysis, and plasma arc

- High costs and low returns: has a track record of major failures and lost more than $2 billion as of 2017 (GAIA, 2017)
- Not climate-friendly: emits CO_2 in both production and burning of plastic-derived fuel, which is another fossil fuel (GAIA, 2020)
- Toxic hazard: releases pollutants in gaseous emissions and by-products in a similar way to waste incineration (GAIA, 2020)

Chemical recycling
(plastic repolymerization)

- Unproven technology: few projects are operational and claims are largely inflated (Hindenburg Research, 2020)
- Often, outputs are burned due to low quality and high levels of contamination (GAIA, 2020)
- Not climate-friendly: processing **one tonne** of plastic in a pyrolysis facility emits at least **3 tonnes** of CO_2 (GAIA, 2020)
- Toxic hazard: releases toxicants in plastic into the environment as air emissions and residues (GAIA, 2020)

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Downcycling
("plastic-to-road," "plastic-to-brick")

- Toxic hazard: hazardous chemicals can leach when downcycled materials are exposed to heat, UVs, and water (Oropeza, 2019)
- Resulting microplastics can attract more pollutants like polychlorinated biphenyls (PCBs) (Oropeza, 2019)
- Turns plastic waste into materials with lower quality or value — products become no longer recyclable (Greenpeace, 2019)
- Plastic-based construction materials are a significant fire hazard (Easton, 2020)

Compostable bio-based plastic

- Not climate-friendly: produces more GHG emissions than fossil-based plastic and widescale adoption could require 5% of all arable land. (Zheng & Suh, 2019)
- Toxic hazard: has similar levels of toxicity to conventional plastic (Zimmermann, 2020)
- It also takes up to **1 year** to degrade per item unless supported by nearby industrial composting facilities (Rethink Plastic, 2018)
- Often mismanaged, contaminating plastic recycling streams and ending up landfilled or incinerated (Rethink Plastic, 2018)

! **Oxo-degradable plastic** is fossil-based and fragments into micro and nano-plastic in presence of UV light or heat; banned in the EU (Zero Waste Europe, 2019)

Circular economy

REAL SOLUTIONS TO THE GLOBAL PLASTIC CRISIS

Comprehensive policy solutions addressing the petrochemical industry hold the key to reducing fossil fuel extraction and shifting our plastic production and consumption patterns. Bans on unnecessary single-use plastic are already beginning to make a mark on plastic waste generation at city, national, and regional levels, and a growing number of communities are implementing zero waste initiatives in order to maximize waste prevention and reduction through toxic-free, just, circular loops.

RECOMMENDATIONS

Produce less plastic. The petrochemical industry will not voluntarily scale back production, so public policies are required. These can include bans on single-use and other unnecessary plastics; a ban on constructing new or expanded plastic production facilities; a quantitative cap on plastic production; and a tax on plastic production. These measures would function most effectively in the framework of a global plastics treaty, given the global nature of the petrochemicals economy.

Encourage alternative service delivery models. A growing number of zero waste businesses aim to displace plastic with reusable packaging or providing services that eliminate the need for plastics.

Support recycling. To revitalize recycling, eliminate additives, mixed-polymer and mixed material plastics (e.g. sachets); mandate recycled content standards; require producer financial responsibility for post-consumer plastics; and integrate the informal sector.

Avoid false solutions.

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