

A global plastic treaty must cap production

In March, the UN Environment Assembly adopted a resolution to combat plastic pollution with a global and legally binding plastics treaty by 2024 (1). In his News In Depth story "United Nations to tackle global plastics pollution" (25 February, p. 801), E. Stokstad discusses many of the ambitious provisions that were included, such as a consideration of the whole plastic life cycle and binding targets. However, it is unclear whether the treaty will include a cap on production or cover plastic chemicals. Despite interventions by the industry (2) and objections from the United States and other delegations, reducing plastics at the source by curbing production is critical.

The current mass of plastic production is at about 450 million tons annually and set to double by 2045 (3). The immense quantity and diversity of both plastics and plastic chemicals, the total weight of which exceeds the overall mass of all land and marine animals (4), already poses enormous challenges. Ensuring the safety of every available plastic and chemical is impossible, as their rates of appearance in the environment exceed governments' capacities to assess associated risks and control problems (5). Plastic pollutants have altered vital Earth system processes to an extent that exceeds the threshold under which humanity can survive in the future (i.e., the planetary boundary) (5). Because legacy plastics in the environment break down into micro- and nanoparticles (6), this form of pollution is irretrievable and irreversible (6). In addition to the risks for human and environmental health, the whole life cycle of plastic accounts for 4.5% of our current greenhouse gas emissions (7) and could consume 10 to 13% of our remaining CO₂ budget by 2050 (8). The growing production and inevitable emissions of plastics will exacerbate these problems (6).

Failing to address production will lead to more dependence on flawed and insufficient strategies. Some waste management technologies, such as forms of thermal and chemical recycling, cause socioeconomic and environmental harm (9). Much of the plastic waste is currently exported from the North to the Global South, which poses a substantial threat to marginalized and vulnerable communities and their environments (10). Even when applying all political and technological solutions available today, including substitution, improved recycling, waste management, and circularity, annual plastic emissions to the environment can only be cut by 79% over 20 years; after 2040, 17.3 million tons of plastic waste will still be

released to terrestrial and aquatic environments every year (11). To fully prevent plastic pollution, the path forward must include a phaseout of virgin plastic production by 2040 (12).

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COMPETING INTERESTS

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