

Aftershocks of SARS-CoV-2: A plastic pandemic

by Jacqueline Mincer



After SARS-CoV-2 was declared a pandemic, the media was quick to celebrate temporary reductions in daily global carbon emissions. It is true that forced confinement and travel restrictions have temporarily improved air quality and decreased global greenhouse gas emissions.¹ However, increased demand for one-time-use plastic products raises concern about a tidal wave of global pollution on the horizon.²

Environmentalists have long been warning about a pandemic of plastic pollution disrupting terrestrial and marine ecosystems. As new hygiene practices-like widespread use of disposable personal protective equipment (PPE)-emerge into mainstream society, this surge in plastic waste further exacerbates our pollution problem. Over a one-month period, incorrect disposal of one percent of masks would result in ten million masks- an estimated 40 thousand kilograms of waste-polluting the environment.³

In 2018, the European Parliament voted for a continental ban on single-use plastics, with Canada planning to follow suit by 2021.⁴ These progressive developments contrast heavily with mid-pandemic reports about production plants scrambling to meet huge demands for plastic. Worldwide, plastic industry lobbyists are urging for postponement of single-use plastic bans and exploiting fears around use of non-plastic alternatives.⁵ SARS-CoV-2 is serving as a lifeline to the plastics industry.

Combining perceived safety with convenience and affordability, disposable plastics are an attractive product during this time of health and economic uncertainty. However, this association between plastic and hygiene is not founded on scientific evidence. Rather, SARS-CoV-2 retention on plastic surfaces is equal to that of glass and metal and remains more stable on plastic relative to other surfaces.^{6,7} Nevertheless, this false perception that plastic is the most sanitary choice is shaping guidelines put out by ministries of health.⁵

The goal is not to rid our society of plastics altogether or label them as inherently problematic. Rather, we should work towards appropriate utilisation and post-consumer waste treatment of plastics. Now is a rare opportunity for the global community to pause and reflect on our interactions with the earth, and actively shift towards a more sustainable circular economy.² Lessons learned from SARS-CoV-2 can serve as a catalyst for a rapid global response to plastic pollution.

1. A global response is possible

SARS-CoV-2 triggered an unprecedented level of global cooperation. Across the world, countries stepped up to prioritize public health and invested eight trillion dollars in relief efforts.⁸ With enough determination, a massive and rapid global behavioural response is possible.

2. A global response requires collaborative effort

To enact change, much of the burden falls on the individual to shift towards a waste-conscious lifestyle, whereby we actively monitor and evaluate our own subtle consumption and waste behaviours. Individual action alone, however, is ineffective without collaborative efforts from public services, industries, corporations, policymakers and government leaders. With guidance from environmental experts, behavioural theorists, engineers, chemists, ecologists, and enforcement by local and international authorities, we can enact system-level changes.

Stakeholders should come together to create strict guidelines for creation of reusable and recyclable products; educate about proper use and disposal of plastics; and invest in more ecologically sustainable alternatives that are equally hygienic and convenient.

3. A global response must begin upstream

Similar to our world response to SARS-CoV-2, our response towards the long-standing plastic pollution crisis has been more reactive than proactive. In efforts to mitigate plastic pollution, industries have largely focused on recycling and other downstream initiatives. Sustainable change must begin further upstream with design of reusable products that support a circular economy.

Our current linear economy follows a take-make-dispose industrial process: exploitation of resources, cheap manufacturing of products, followed by ultimate disposal of products as waste. This traditional linear production model constrains natural resources and leaves minimal opportunity for sustainable recovery. A circular economy, however, replaces production with sufficiency, with aims to extend the life cycle of products and lessen adverse ecological impacts. Emphasis is placed on conservation of resources as well as prioritization of the 4Rs: reducing, reusing, recycling and recovering.⁹

Global PPE shortages have revealed the health care sector's dependence on single-use items. Demand for supplies sparked innovation-led opportunities, including research and development of more sustainable PPE options. For example, researchers have devised procedures to sanitize N95 masks for reuse. Similarly, many companies in the private sector have repurposed production lines to make face masks from reusable fabrics. As we move forward, this positive momentum can help propagate our economy towards a sustainable, circular system.

4. A global response offers economic benefits

In nearly every environmental emergency, economically driven leaders are pitted against their environmentalist counterparts. However, ignoring plastic pollution makes little financial sense. In 2014, the financial damage associated with plastic pollution was estimated to cost US\$13billion annually, including clean-up costs and financial losses in fishing and tourism industries.¹⁰ Moving planetary health to the forefront of our global agenda will ultimately reap economic benefit.

5. A global response safeguards human health

Environment-related crises - including global pollution - are among the greatest public health threats that we face today. How we choose to interact with our planet will have environmental, economic and health consequences for years to come. If we do not change our current trajectory, the SARS-CoV-2 pandemic will be one chapter of a longer story of planetary crises. Threats to planetary health are threats to human health. Cross-disciplinary efforts are urgently needed to properly safeguard our health.

A global response (1) is possible; (2) requires collaborative effort; (3) must begin upstream; (4) offers economic benefits; and (5) safeguards human health.

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References

1. Le Quéré C, Jackson RB, Jones MW, Smith AJP, Abernethy S, Andrew RM, et al. Temporary reduction in daily global CO₂ emissions during the COVID-19 forced confinement. *Nat Clim Change* 2020; published online May 19. DOI:10.1038/s41558-020-0797-x
2. Klemeš JJ, Fan YV, Tan RR, Jiang P. Minimising the present and future plastic waste, energy and environmental footprints related to COVID-19. *Renew Sustain Energy Rev* 2020; published online Apr 27; **127**:109883. DOI:10.1016/j.rser.2020.109883
3. World Wildlife Fund (WWF) Italy. Nello smaltimento di mascherine e guanti serve responsabilità.[internet]. 2020 Apr 29 [cited 2020 Jun 14]. Available from: <https://www.wwf.it/scuole/?53500%2FNello-smaltimento-di-mascherine-e-guanti-serve-responsabilita>
4. Howard BC, Gibbens S, Zachos E, Parker L. A running list of action on plastic pollution. National Geographic: Environment [Internet]. 2019 Jun 10 [cited 2020 Jun 14]. Available from: <https://www.nationalgeographic.com/environment/2018/07/ocean-plastic-pollution-solutions/>
5. Renner S. Zero waste in the time of COVID. The Tyee [Internet]. 2020 Jun 5 [cited 2020 Jun 14]. Available from: <https://thetyee.ca/News/2020/06/05/Zero-Waste-During-COVID/>
6. Doremalen N van, Bushmaker T, Morris DH, Holbrook MG, Gamble A, Williamson BN, et al. Aerosol and surface stability of SARS-CoV-2 as compared with SARS-CoV-1. *N Engl J Med* 2020; published online Apr 16; **382**:1564-67. DOI:10.1056/NEJMc2004973
7. Kampf G, Todt D, Pfaender S, Steinmann E. Persistence of coronaviruses on inanimate surfaces and their inactivation with biocidal agents. *J Hosp Infect* 2020 Mar 1; **104**(3):246-51.
8. Herrero M, Thornton P. What can COVID-19 teach us about responding to climate change? *Lancet Planet Health* 2020 May; **4**(5):e174.
9. Garcés-Ayerbe C, Rivera-Torres P, Suárez-Perales I, Leyva-de la Hiz DI. Is it possible to change from a linear to a circular economy? An overview of opportunities and barriers for European small and medium-sized enterprise companies. *Int J Environ Res Public Health* 2019; published online Mar 8; **16**(5):851. DOI: 10.3390/ijerph16050851
10. UN Environment Programme (UNEP). Plastic waste causes financial damage of US\$13 billion to marine ecosystems each year as concern grows over microplastics [press release]. (2014 Jun 23) [cited 2020 Jun 15] . Available from: <http://www.unenvironment.org/news-and-stories/press-release/plastic-waste-causes-financial-damage-us13-billion-marine-ecosystems>