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## SYMPOSIUM ON GLOBAL PLASTIC POLLUTION

THE MONTREAL PROTOCOL OR THE PARIS AGREEMENT AS A MODEL FOR A  
PLASTICS TREATY?*Elizabeth A. Kirk\**

The notion that a plastics treaty is necessary is gaining traction, but there is less agreement as to its content. Some, including this author, have suggested that a plastics treaty should be modelled on treaties such as the Montreal Protocol,<sup>1</sup> which sets out a broad commitment to end the use of a particular material and then introduce regulations to ban particular forms of that material over time.<sup>2</sup> This approach has an immediate appeal—it sends a signal to states and to industry that they must change their behaviors and products, while giving time to adapt to the new regulation and develop alternative materials or ways of working. The potential drawback of this approach is that some states simply will not accept such rigid standards. In addition, some states may prefer a second approach that is more obviously rooted in the principle of common but differentiated responsibilities, which assigns different obligations to parties according to their respective capacities. Within the climate change regime, the Paris Agreement takes both approaches,<sup>3</sup> asking states to set their own nationally determined contributions (NDCs) to emissions reductions (common but differentiated responsibilities) and then to revise these NDCs over time through an iterative process to deliver progressively more ambitious targets for emissions reduction (moving toward a ban) or mitigation. In reality, neither approach is entirely suited to regulating plastics, so a new approach to treaty-making is required. This new approach should focus on the outcomes desired rather than the practices that need to be regulated.

*The Synthetic Nature of the Pollutant*

Plastics, like the ozone-depleting chemicals banned by the Montreal Protocol, are synthetic. Without industrial processes, neither plastics nor the vast majority of ozone-depleting chemicals would exist. It is therefore within society's control to eliminate the production of these substances. Indeed, the synthetic nature of plastics and the fact that humans have lived without these materials until relatively recently in historical terms point to the fact that it should be possible to live without these substances again. From this perspective, a ban on their manufacture and use, such as the ban on ozone-depleting chemicals in the Montreal Protocol (Articles 2 and 2A to J), would be feasible.

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<sup>1</sup> [Montreal Protocol on Substances that Deplete the Ozone Layer](#), Sept. 16, 1987, 1522 UNTS 3.

<sup>2</sup> Elizabeth A. Kirk & Naporn Popattanachai, *Marine Plastics: Fragmentation, Effectiveness and Legitimacy in International Law-Making*, 27 RECIEL 222 (2018); Ina Tessnow-von Wysocki & Philippe Le Billon, *Plastics at Sea: Treaty Design for a Global Solution to Marine Plastic Pollution*, 100 ENVTL. SCI. & POL'Y 94 (2019).

<sup>3</sup> Conference of the Parties, [Adoption of the Paris Agreement](#), Dec. 12, 2015, UN Doc. FCCC/CP/2015/L.9/Rev/1.

The appropriateness of a complete ban rather than a mere reduction in pollution (as seen in the Paris Agreement in relation to greenhouse gases) is underlined by the fact that while many greenhouse gases are naturally “recycled” through photosynthesis and respiration, plastics and ozone-depleting chemicals either persist in the environment or, when they degrade, create other toxic products. The appropriateness of a ban becomes even more apparent when one considers that plastics are accumulating in the environment at a rate of five to thirteen million tons a year.<sup>4</sup>

By contrast, while some synthetic chemicals also function as greenhouse gasses, significant quantities of greenhouse gasses are also emitted through natural respiratory processes and the decay of naturally occurring carboniferous materials such as wood. It is patently not possible, and not at all desirable, to eliminate all greenhouse gas emissions. This fact is recognized in Article 2 of the Paris Agreement, which accepts that emissions cannot be completely eliminated but posits that mitigation of climate change is possible.

In this sense, the approach taken in the Montreal Protocol appears to be a more suitable model for a plastics regime than that taken in the Paris Agreement. The Montreal Protocol anticipates that all countries will eventually ban the manufacture and use of chemicals listed in its annexes (although its provisions allow for longer compliance times for developing states in some circumstances).<sup>5</sup>

### *The Socioeconomic Context*

Whether states should ban plastics, as the scientific evidence indicates, and what such a ban might mean for the operation of our societies and economies are, of course, entirely different issues, and it is these latter issues that prompt comparisons between a potential plastics treaty and the climate change regime. Plastics have become, like greenhouse gases, integral to almost all aspects of our lives in a way that ozone-depleting chemicals never were. Plastics are found in all manner of products, from toothbrushes to computers. They are also integral to ensuring the supply of fresh food and water in many countries, particularly in those where potable water is not piped into every house and refrigeration is not available to all, and in those that regularly experience severe weather events. It is possible that some of these plastics could be replaced with biodegradable and compostable plastics,<sup>6</sup> but even the replacements are problematic in that they can cause the same types of pollution as oil-based plastics if not disposed of properly.<sup>7</sup> Moreover, the plastics currently used in medicine, such as hearing aids and heart valves, cannot easily be replaced.

States might consider addressing these issues through the transfer of plastic-recycling technology<sup>8</sup> to those countries most in need. Both the Paris Agreement (Article 9) and the Montreal Protocol (Article 10) provide mechanisms on financial or technology transfer that might seem, at first glance, to serve as useful models for provisions in a plastics treaty. These measures, however, would have significant limitations in relation to plastics pollution. While some states have achieved significant success in recycling rates, only around 9 percent of the

<sup>4</sup> Jenna R. Jambeck et al., *Plastic Waste Inputs from Land into the Ocean*, 347 *SCI.* 768 (2015).

<sup>5</sup> Developing states have longer compliance times if they consumed less than a given amount of each regulated chemical at the date of entry into force or before January 1, 1999.

<sup>6</sup> J.H. Song et al., *Biodegradable and Compostable Alternatives to Conventional Plastics*, 364 *PHIL. TRANSACTIONS ROYAL SOC'Y B: BIOLOGICAL SCI.* 2127 (2009).

<sup>7</sup> Danny Taufik et al., *The Paradox Between the Environmental Appeal of Bio-Based Plastic Packaging for Consumers and Their Disposal Behaviour*, 705 *SCI. TOTAL ENV'T* 13582 (2020).

<sup>8</sup> See, e.g., Melissae Fellett, *Improving a Plastic-Degrading Enzyme for Better PET Recycling*, *C&EN: CHEMICAL & ENGINEERING NEWS* (Feb. 28, 2018).

plastics produced since 1950 have been recycled.<sup>9</sup> An enormous investment would, therefore, be required for all plastics to be recycled, making the likelihood of universal recycling very small indeed. Moreover, if financial and technology transfers are to be used to address plastics pollution, care will be needed to ensure that they do not simply create further opportunities for the companies that created the pollution in the first place to profit from its removal at the expense of the interests and needs of developing states in particular.<sup>10</sup>

In addition, providing a mechanism to improve recycling capacity cannot address all plastics issues. The ubiquity of plastics mirrors that of greenhouse gas emissions from the fossil fuels used to power our vehicles, heat or cool our buildings, and generate electricity. Plastics are common not only in packaging food and beverages, but also in clothing and other fabrics such as carpets, which shed microfibers into the air and, when washed, into water-courses. Plastics are also found in the tires of both private and commercial vehicles as well as on road surfaces. Tackling the problem of plastics pollution completely would require a thorough reconsideration of transport systems and many of the products we have come to rely on. Such systemic change is unlikely to happen rapidly.

In this regard, the Montreal Protocol and the Paris Agreement measures for a phased adaptation of industries and economies provide a potential model for a treaty on plastic pollution. Under such an approach, a ban on plastic products might focus either on certain types of plastic based on their chemical composition, or on certain uses of plastics. Banning types of plastic would follow the approach taken within the Montreal Protocol. In some ways it might be the easier approach for industry to respond to in that there is clarity as to what chemical formulations can be used in plastics production. This approach is unlikely, however, adequately to address the problem of plastics, as producers of products such as plastic bottles could simply move from one chemical formula to another, equally problematic, formula until that too is banned.

The alternative approach of focusing on uses of plastics would, or at least should, be more successful in reducing plastics pollution. Under this approach, single-use plastics such as bags and bottles might be the first items subject to a ban, as already seen in so many countries,<sup>11</sup> with bans then extending to the use of plastics in other products such as computers or cars in subsequent years. The process would likely take decades to reach the point of an almost complete ban of plastic products, leaving only essential health-related plastic products, which would be subject to strict recycling requirements.

### *A Different Type of Treaty*

The systemic nature of the use of plastics, the available treaty models, and the danger that abrupt change poses to the world's economy suggest that it will take many years to fully address plastic pollution. Indeed, the immediate impact on the world's economy from the need to rapidly respond to the Covid-19 outbreak draws this into sharp focus.

At the same time, some rapid adjustments to Covid-19 demonstrate that there are many business practices which can adapt without harm to individuals or businesses. Perhaps, then, more radical change in the production of goods is possible in response to the equally pressing problem of plastics pollution. Urban farming, for example, could be promoted to enable the production of crops close to where they will be consumed, thus dramatically reducing the need for packaging and transportation.

<sup>9</sup> Roland Geyer et al., *Production, Use, and Fate of All Plastics Ever Made*, 3 SCI. ADVANCES 1 (2017).

<sup>10</sup> Vandana Shiva, *The Greening of the Global Reach*, in GLOBAL ECOLOGY: A NEW ARENA OF POLITICAL CONFLICTS (Wolfgang Sachs ed., 1993).

<sup>11</sup> UN Env't Programme, *Legal Limits on Single-Use Plastics and Microplastics: A Global Review of National Laws and Regulations* (2018).

If we are to achieve these radical changes, however, we need a different type of treaty. International agreements such as the Montreal Protocol tend to focus on the problem—what ought *not* to be done. In introducing bans on emissions, for example, no consideration is paid to what alternatives ought to be introduced. This approach risks the introduction of alternatives that are as harmful as, or even more harmful than, the material originally subject to the ban, leading to the need for further regulation. Perhaps it is time to focus on potential non-harmful solutions to plastics pollution and adopt measures to facilitate their introduction.

Focusing on solutions does of course also bring risks. Any change in the way we organize our economies risks some companies going out of business if they are unable to adapt to the new priorities. It also raises the possibility of lobbying from the companies at risk, to slow or prevent the change that is proposed. And the need for coordinated planning risks delay in the implementation of any large-scale change. There are also further risks in attempting to solve the problem of plastics pollution. One is a lack of imagination: Perhaps we will fail, in the time taken to negotiate an agreement, to conceive of the best solutions and thus adopt a suboptimal agreement or follow a path-dependent<sup>12</sup> approach by which new solutions simply build on existing technological approaches. The result may be, as often happens, that one problem—plastics pollution—is simply replaced by another, unforeseen problem.

But all of these risks can be mitigated by adopting incremental processes similar to those seen in international agreements such as the Montreal Protocol and the Paris Agreement, through which measures are strengthened over time. In the former, more and more chemicals have been added to the list of substances to be banned during the lifetime of the agreement. In the latter, states are asked to adopt progressively more ambitious domestic targets.

Yet focusing on incremental improvements also carries the very real risk that the harm caused by plastics pollution continues in the period between adoption and the time when the treaty goal is reached. Few treaties provide mechanisms to address this risk beyond providing for technology transfer between parties and financial assistance to those most in need. These mechanisms leave the problem and solution in the hands of individual countries, but the nature of plastics pollution requires a different approach. Like ozone-depleting chemicals and greenhouse gases, plastics cause a shared problem for our global commons. In the case of plastics, that problem is the accumulation of plastic in the oceans. But whereas actions by individual states to stop emissions of ozone-depleting chemicals, for example, can be sufficient to enable the natural processes of ozone production and depletion to repair the ozone layer, simply stopping production of plastics will not lead to removal of the problem of existing plastics pollution, at least not in the time scales society works within. A mechanism to facilitate removal is, therefore, needed.

Neither the Montreal Protocol nor the Paris Agreement provide a model for a solution to this issue, but a solution could be found by learning from practice in relation to oil pollution and in particular from the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (Fund Convention).<sup>13</sup> In the same way that the Fund Convention is financed through contributions from oil importers and exporters to provide compensation in the event of an oil spill to those who would not otherwise receive full compensation, a plastics treaty could establish a Plastics Fund through contributions from treaty parties. The Plastics Fund could then be used to support clean-up of plastics pollution in the oceans.

Consideration would have to be given to how contributions to this Plastics Fund would be assessed. For example, would they be determined on the basis of production and use of plastics or simply import and export? The latter approach would overlook the large quantities of plastics that are manufactured and used within the borders

<sup>12</sup> W. BRIAN ARTHUR, [INCREASING RETURNS AND PATH DEPENDENCY IN THE ECONOMY](#) (1994); W. Brian Arthur, [Competing Technologies, Increasing Returns, and Lock-in by Historical Events](#), 99 *ECON. J.* 116 (1989).

<sup>13</sup> [International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage \(Fund Convention\)](#), Dec. 18, 1971, 1110 UNTS 57.

of individual states, while the former would risk underreporting from states. In an ideal world the answer to underreporting would be to include measures allowing for independent inspections of national measures and activities rather than the national reporting seen in the Montreal Protocol (Article 7) and the Paris Agreement (Article 13). States are unlikely to agree to independent inspection, and engaging other actors such as NGOs to monitor state activities is fraught with challenges, ranging from lack of NGO independence to their tendency to focus on particular issues and perspectives.<sup>14</sup> Yet even if reporting is not completely accurate, the creation of a Plastics Legacy Fund, supported by contributions from countries that make, use, or export plastics could raise significant funds with which to address the problem of legacy plastics.

### *Conclusion*

There are important similarities between plastics pollution and the pollutants addressed by the Montreal Protocol and the Paris Agreement. Like ozone-depleting chemicals, plastics consist of entirely synthetic materials. And like the greenhouse gases that result from the combustion of fossil fuels, there is an important economic dimension to plastics. These similarities might suggest that a treaty addressing plastics could simply follow one of the existing models. Plastics, however, bring the added problem that natural systems cannot recover from them without human intervention, and it is this difference that requires a new approach. Measures are needed to stop future production, prevent the replacement of oil-based plastics with alternatives that turn out to be equally harmful, and remove legacy plastics. Measures are also needed to guide us toward new ways of organizing the production and distribution of goods.

<sup>14</sup> See, e.g., Rosaleen Duffy, [Global Environmental Governance and North-South Dynamics: The Case of the CITES](#), 31 ENV'T & PLANNING C: POL. & SPACE 222 (2013).