ENERGY & ENVIRONMENTAL POLICY TRENDS

November 2020

THE HIDDEN COSTS OF A SINGLE-USE PLASTICS BAN

On October 7, the Canadian government announced the details of its proposed plan to achieve zero plastic waste by 2030, including a ban on six single-use plastics items. Is a ban the best approach? What does the evidence suggest?

Governments around the world have committed to reduce waste by targeting single-use plastics. As of 2018, more than 60 countries had some sort of ban or levy on specific plastic items like plastic bags and Styrofoam (UNEP 2018), eight U.S. states have banned plastic bags and China plans to follow suit by 2022. In 2019, the European Union banned a variety of items (plastic cutlery, cotton buds, straws and stirrers). Canada is now proposing the most comprehensive single-use plastics ban of any country to date, committing to ban six items — "plastic checkout bags, straws, stir sticks, six-pack rings, cutlery, and food ware made from hard-to-recycle plastics" — by the end of 2021 (ECCC 2020a). (Importantly, medical single-use plastics are not included in the ban or forthcoming restrictions). While a 2019 Nanos Research poll suggests that the majority of Canadians support a ban on single-use plastics, there is little research on the broader environmental, social and economic impacts of such a policy. A better scientific understanding could help tailor more effective plastics policies.

STATE OF THE SCIENCE

In order to qualify for a ban, an item must be shown to be both "environmentally and value-recovery problematic" (ECCC 2020b). The Canadian government is relying on five types of data to assess these criteria: evidence of the potential harm to the environment and human health posed by plastics; the types of litter items found along shorelines and beaches (volunteer-reported data); commonly used single-use plastics items (uncited "sector-specific research"); plastics waste value-chain modelling and uncited work on "single-use plastics prioritized for reduction actions" in other jurisdictions (ECCC 2020b). The stated policy objective is to "reduce environmental harm caused by plastic products, in particular single-use plastics, by managing or, where necessary, prohibiting their use" (ECCC 2020b). Yet no data on the overall environmental harm caused by the cumulative use of these specific items are being considered, nor data on the potential cumulative environmental harm caused by the production, use and management of alternatives expected to replace banned items. There has been no assessment of the full life-cycle impacts of the proposed ban.
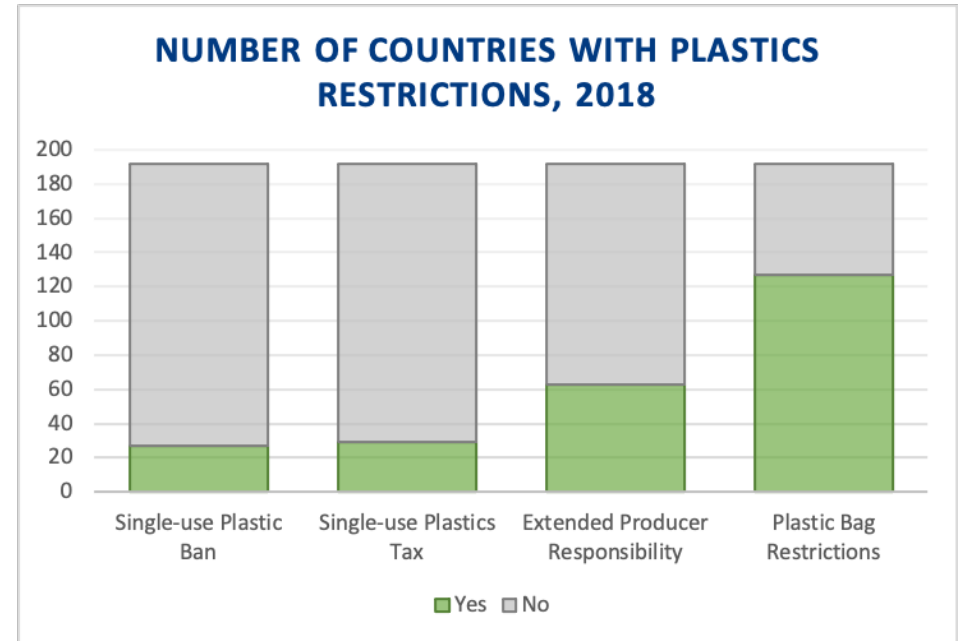
POLICY EFFECTIVENESS

To understand if a ban on these items is the most appropriate policy action, two questions warrant further inquiry: (1) Are these the most appropriate items to target to achieve the policy objective? and (2) What alternatives will consumers or supply chains use instead of the banned items and what are the impacts of increased use of these items?

First, the science is unclear on what items cause the most environmental harm, because macroplastics break down into microplastics in the environment and become unrecognizable over time. Microplastics are known to be extremely environmentally harmful and microbeads — microplastics formerly used in many personal care products — became a banned substance in Canada in 2016. The majority of microplastics in the environment, however, including in and around Canada's Great Lakes, are fragments of broken-down larger items (Erikson et al. 2013; Li et al. 2018). We still lack an understanding of what macroplastic items contribute most to these fragments and cause the most environmental harm from a life-cycle perspective. Fishing gear, for example, has been shown to be one of the most common types of plastic pollution affecting coastal environments in Canada (Nguyen 2020) and poses the greatest risk to marine fauna entanglement (Wilcox et al. 2016). Canada has invested in clean-up efforts to address this source of plastics pollution, though no preventative policies are slated.

The School of Public Policy
University of Calgary Downtown Campus
906 8th Avenue S.W., 5th Floor
Calgary, Alberta T2P 1H9

Authors: Victoria Goodday, Jennifer Winter and Nicholas Schumacher
Interested in having *Energy & Environmental Policy Trends* delivered to your in-box? Email: sppweb@ucalgary.ca
www.policyschool.ca

THE SCHOOL OF PUBLIC POLICY

UNIVERSITY OF CALGARY

Next, policy-makers should consider what alternative products may be used in place of the banned items and the effects of this shift, including effects on supply chains and waste management systems. Academic literature is mixed on the broader economic and environmental impacts of plastics alternatives and many studies suggest significant trade-offs, possibly resulting in increased environmental impacts overall. Taylor (2019) finds that banning plastic grocery bags in California increased the sales of small, medium and large trash bags by 120 per cent, 64 per cent and six per cent respectively. A life-cycle analysis conducted by the Quebec government found that no replacement option has an environmental advantage over plastic grocery bags (Recyc-Quebec 2017). Earlier work by Bell and Cave (2011) supports this result, showing that it takes more than four times more energy to manufacture a paper bag than a plastic bag. Levis and Barlaz (2011) demonstrate that producing and disposing of certain biodegradable alternatives results in more greenhouse gas emissions than similar plastics. Work out of York University suggests that changes to food packaging could result in higher rates of food spoilage leading to increased methane emissions (a greenhouse gas 84 times more potent than carbon dioxide) and bulkier packaging could lead to increased transportation emissions (CBC 2020; WasteWiki).

What we know is that we do not have a complete understanding of the impacts of the Canadian government's proposed single-use plastics ban. Without better science underpinning the policy choice, it is not clear that banning these six items is the most efficient way to "reduce environmental harm caused by plastic products" or that it will in fact result in an overall reduction of environmental harm. Worldwide, plastic bag restrictions, extended producer responsibility policies and a single-use plastics tax are all more common approaches than outright bans (Figure 1). Implementing a single-use plastics tax may be a better option, as it could incentivize consumers to reduce usage without disrupting global supply chains. Further integrated cumulative-effects assessment is needed in this area to better meet policy objectives.

FIGURE 1: NUMBER OF COUNTRIES WITH PLASTICS RESTRICTIONS, 2018

Source: UNEP (2018).

THE SCHOOL OF PUBLIC POLICY

UNIVERSITY OF CALGARY