

# An Inquiry into the Market Acceptance of Circular Plastics

Policy Brief

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*After more than two centuries of using resources for one lifecycle only, our generation is one of the first to experience the severe consequences of this lifestyle. Partly due to carbon emissions linked to excessive mining and discarding material, global temperature rises, Arctic ice melts, sea levels rise, land floods, severe weather events become the new standard [Shaftel, 2020, WBG, SA]. In this research, we have analyzed - from a market perspective - how the transition towards circular plastics can be accelerated in Flanders and the European Union. Therewith, mitigating the impact of plastics on climate change.*

## Plastics

The production of plastics, one of the most commonplace materials, is soaring. According to the OECD, the use of plastics could nearly quadruple by 2050 [OECD, 2018]. Provided that the global community wants to reach the target of keeping the rise in global temperature below 1.5°C by 2100, urgent and drastic action is needed to improve plastic waste management [Shen et al., 2020]. In the past, roughly 80 percent of plastic waste has been landfilled or dumped in the environment [OECD, 2018]. Untreated plastic waste slowly releases carbon and micro plastics in oceans reduce the carbon fixation potential of oceans [Shen et al., 2020]. Moreover, the production of virgin plastics emits around 6 times more greenhouse gases than when recycling plastics. Therefore, unless the global community takes action, plastics could soon absorb a significant part of the remaining global carbon budget.

## Research question

The pressing question is of course why not all plastics are being recycled yet. In this research we analyzed this question from an investor's perspective. It turns out that increased price volatility for recycled plastics is one of the main reasons for investors to delay investments in recycling facilities for plastics. Moreover, we find that the perspective of investors is key. A profit maximizing investor will only invest in recycling facilities for plastics<sup>1</sup> in the distant future. However, if that same investor would maximize social welfare – meaning that the investor takes into account consumer surplus as well – and would take into account the environmental costs of recycling and producing virgin plastics, we find investments would already have taken place, even with the increased price volatility.

## Market failure

The current absence of investments in recycling facilities for plastics is driven by a profit maximizing perspective of private investors. Provided that governments should not only take into account profits of private firms, but also consumers' welfare and environmental externalities, the non-appearance of investments in recycling facilities for plastics can be interpreted as a market failure. In turn, this market failure advocates for government intervention. Generally speaking, government interventions can be incentive-based or regulatory [Keohane et al., 1998]. Incentive-based interventions, e.g. environmental taxes, leave market players

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<sup>1</sup>Specifically polyethylene.

with a choice to either change their behavior or to, e.g. pay taxes. In contrast, regulatory interventions force market players to change, e.g. product regulations.

## **Incentive-based government intervention**

Incineration taxes, that is a tax levied on the incineration of - in this study's context - industrial plastic waste, incentivize firms to reduce plastic waste generation and to recycle instead of incinerate the remaining plastic waste. In Flanders however, due to the European lack of recycling capacity, the incineration tax only incentivizes firms to reduce plastic waste [De Weerd et al., 2020]. The remaining plastic waste is still incinerated. Unfortunately, the incineration tax rate turns out to be too low (+/- 10 euros per ton incinerated) to elicit investments in recycling facilities for plastics. Nevertheless, we do not necessarily plea for a high incineration tax rate, but we argue the tax rate should be equal to the marginal externality of incinerating plastic waste.

Despite that our results indicate some firms, e.g. mass producing firms, generate relatively more plastic waste, we argue that policymakers should not levy different tax rates for different types of firms. Obviously, the marginal externality of incinerating plastic waste remains equal across firms. We do however emphasize the importance of approaching these specific firms, raising their awareness, and analyzing possible waste reducing measures.

## **Regulatory government intervention**

Governments can mandate consumers to change their behavior, e.g. low emission zones. Likewise, governments can mandate firms to use different materials in their production processes. An example would be the European Union's (EU) framework to mandate the use of non-harmful chemicals (REACH). Recently, in the New Circular Economy Action Plan – constituting a main pillar of the European Green Deal – the European Commission (EC) has launched the idea of mandating the use of recycled plastics. Such policy would lead to a strong demand for recycled plastics and in turn to investments in recycling capacity for plastics. As a consequence, this policy could resolve the current deadlock.

However, regulatory policies suffer from pitfalls. If the use of recycled plastics is regulated too strictly, that is, the required fraction of recycled material in a product is too high, technical and / or economic boundaries will cause the market to cease its activity. Moreover, mandating firms to change their production process could lead to undesired market power, e.g. the operators of recycling facilities for plastics could gain significant market power. Besides, it turns out that the implementation time of a regulatory policy should be communicated well in advance. Uncertainty with regard to the implementation time leads to sub-optimal investment decisions in the use of recycled plastics. Therefore, we plea for policymakers to be cautious when communicating about a future potential regulatory policy.

## **Holistic approach**

The current market failure requires government intervention. Rather than a single policy on a single market, we conclude governments should adopt a holistic approach. This type of approach requires governments to intervene on different markets, e.g. waste generation market, recycling market, etc. and to intervene with different types of policies, i.e. incentive-based and regulatory policies. Unless governments succeed in intervening holistically, the environmental impact of plastics will soon be a major concern.

## References

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