

Finding a plastic pollution solution Bans, recycling, energy schemes and alternative materials all have issues

Insights Brief

Key Takeaways

- Today's plastics will still be around in the 25th century
- Banning single use products isn't enough
- The problem must be addressed at all aspects of the value chain

Plastic pollution is a problem but there are no easy solutions. Producers and waste-management firms both have a role, but so have consumers and regulators.

Plastics were invented 111 years ago but can take 450 years to break down. Plastic pollution is a major environmental challenge, but solving it is far more complex than banning single-use plastic.

The substance has made our lives easier, cheaper and more convenient. It helps reduce food waste, cuts vehicle emissions because cars weigh less, and provides insulation that helps make buildings energy efficient. But too little plastic is recycled and too much leaks into soil or rivers and seas, harming marine life, disrupting food chains, and potentially risking human health. However, mooted solutions are neither easy nor quick.

We are unlikely to see a quick change to attitudes to reducing plastic use. The EU has proposed a ban on ten single-use plastic items, but we estimate this would impact a mere 2% of global plastics demand. And single-use bans encourage consumers to switch to materials such as paper or fabric bags or heavy duty reusable plastic cups that also use resources. An organic cotton bag needs to be re-used about 149 times to lessen the environmental costs to that of using a single-use plastic bag once.

Current recycling infrastructure is insufficient. Globally, just 10-15% of plastic waste is recycled – compared with, say, 58% of paper and 70-90% of iron and steel. Theoretically, most thermoplastics can be recycled; in practice, recycling systems cannot cope with issues such as different plastic types, contaminants and small format packaging. Some 25% of collected plastic cannot be recycled because of this.

Improved design is one answer – making packaging from the same type of polymer with recyclable adhesives, for example. Waste companies need to work with plastic manufacturers, particularly on items such as using less black-plastic food packaging.

The top five ocean-polluting countries in 2010 were all Asian: China, Indonesia, the Philippines, Thailand and Vietnam.

China is responsible for 29% of global production but also imported 48% of all plastic waste prior to banning the import of 24 types of waste. This may allow it to bring some structure to its recycling sector but it may force exporters such as Germany, Japan, the UK and the US to rethink their own recycling.

Plastic waste can be burned and the resultant energy used for a range of things, from transport fuel to electricity. However, there are concerns that incineration may reduce the incentive to recycle because collecting and sorting waste can cost more. Worries about emissions have halted waste-to-energy progress but pollution-control technology should encourage expansion.

There are alternatives to traditional plastics, including plant-based polyethylenes which do not involve fossil fuels in their production and break down less slowly. But these have problems too, not least that replacing 3% of global plastics with corn-based plastic would consume 5% of global corn crops.

And even plant-based alternatives can form dangerous microplastics and release toxic chemicals when incinerated. They also need separating from other plastics for recycling.

The simple truth is that it will be hard to find a solution to plastic pollution. There is not yet an alternative as cheap to produce and as useful as plastic that is less environmentally harmful.

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Disclosure Appendix

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Additional disclosures

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