



Fact Sheet

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For more information consult “Drowning in Plastics - Marine Litter and Plastic Waste Vital Graphics” publication by UNEP, the BRS Secretariat and GRID-Arendal. Available from link <https://bit.ly/3GOrz8E>

An introduction to the global plastic waste crisis

Since the mid-1950s the production and use of plastics has grown rapidly. Annual global production of primary fossil fuel-based plastics increased from 2 million tonnes in the 1950s to more than 438 million tonnes in 2017 (Geyer 2020). Up to 99% of plastics are made from polymers from non-renewable hydrocarbons, mostly oil and natural gas. Only around 10% of the plastic waste generated to date has been recycled. 14% has been incinerated and 76% has been disposed of in landfills or released into the environment (Geyer 2020).

Yet, with increasing awareness about the impacts of plastic waste on the environment, many countries are taking action, for example, through regulations or restrictions on unnecessary, avoidable and problematic plastic products.

Plastic production continues to grow rapidly and across regions

Almost 50% of all plastics have been produced since 2005 (ISRI 2020). If current trends continue, it is estimated that by 2050 annual global plastic production will reach over 1,100 million tonnes (Plastics Europe 2019). Historically, Europe and North America have dominated global plastics production. However, in the last decade Asia has emerged as a significant producer, with China accounting for 28% of total plastic resin production and 64% of synthetic fibre production in 2016 (UNEP 2018 Geyer 2020). North America (i.e. the North American Free Trade Agreement) accounts for 21% of global plastic consumption, closely followed by China (20%) and Western Europe (18%) (UNEP 2018).

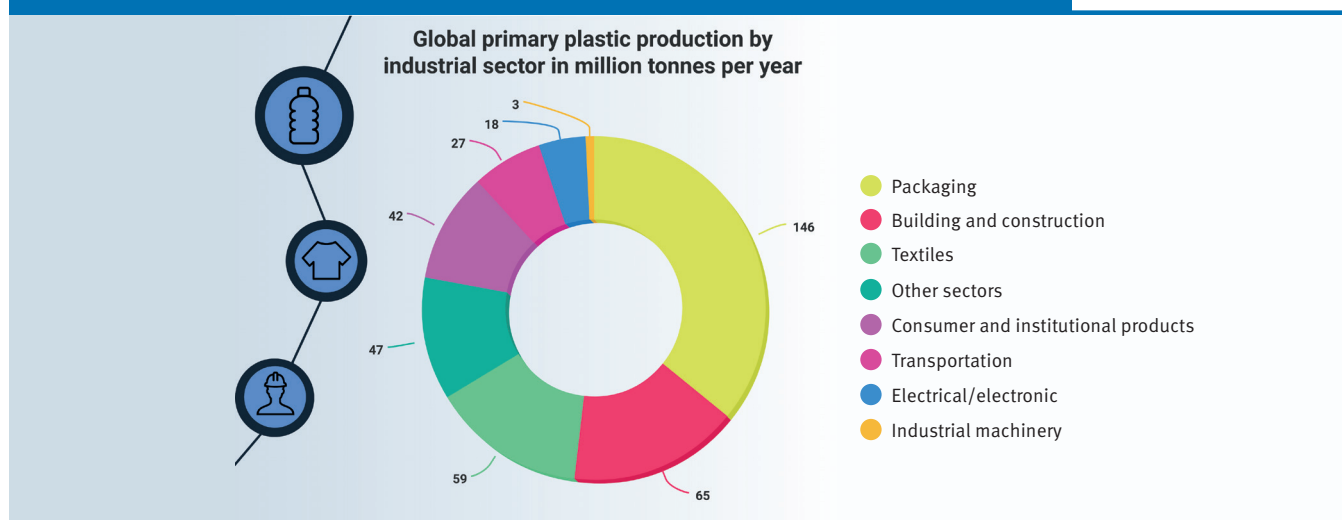
In recent years, the United States, the European Union and China have all invested heavily in the plastic industry (American Chemistry Council 2019, Plastics Europe 2019, McKinsey&Company 2019).

In North America and Europe there is high per capita plastic consumption (94 kg and 85 kg/capita/year, respectively) (Euromap 2016). In China there is lower per capita consumption (58 kg/capita/year), but high consumption nationally because of its large population (Euromap 2016, UNEP 2018).

Packaging is the largest market for plastic resins

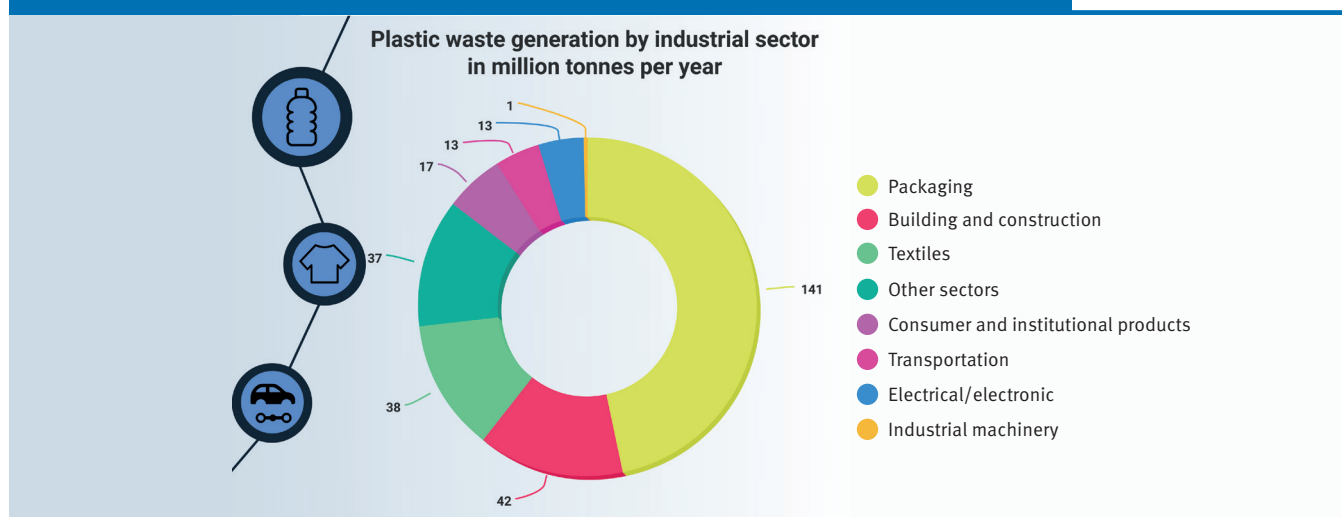
Many plastic products (e.g. disposable cups, plates, cutlery, takeaway containers, carrier bags) are used for only a short period, many for less than a day, especially single use packaging (Resource Futures and Nextek 2018). The most commonly produced plastic consumer products include packaging made from LDPE (e.g. bags, containers, food packaging film), containers made from HDPE (e.g. milk bottles, shampoo bottles, ice cream tubs), and PET bottles for water and other drinks.

Global primary plastic production by industrial sector: Measured in tonnes per year



(Source: Geyer et al. 2017)

Plastic waste generation by industrial sector: Measured in tonnes per year



(Source: Geyer et al. 2017)

Together these products account for around 36% of plastics use in the world (UNEP 2018, Geyer 2020).

Plastic packaging includes a broad spectrum of items used in various sectors, such as the commercial, retail, household, tourism, and agricultural sectors. While plastic packaging accounts for a large share of plastic waste, sectors such as fisheries, construction, agriculture, transport and electronics are also significant users of plastic packaging.

Increasing generation of plastic waste and its consequences

The heavy reliance on plastics in a broad range of economic sectors around the world begs the question of what happens to it once discarded. To date, around 6.9 billion tonnes of primary plastic waste have been generated and hundreds of millions of tonnes are added each year (Geyer 2020). The bad news is that systems for the environmentally

sound management of plastic waste are still insufficient in many parts of the world. Many countries even struggle with the very first step of waste management, which is waste collection.

Despite efforts that are underway to reduce the generation of plastic waste, total waste released to the environment is predicted to increase due to a continuing rise in production of plastic products, the time needed to shift consumer demand, and continued challenges in establishing adequate waste management systems (Borrelle et al. 2020). It is estimated that mismanaged plastic waste will grow from 91 million metric tons in 2016 to 239 million metric tons by 2040 if significant measures are not implemented (Pew Charitable Trusts and SYSTEMIQ 2020). Modelling indicates that without major intervention, between 155 and 265 million tonnes of plastics per year could be discharged into the environment by 2060 (Lebreton and Andrady 2019).

As the plastic waste released into the environment already has a significant impact on the environment, an increase of this magnitude could have dramatic consequences. Plastic pollution has the potential to dramatically shift the ecology of marine systems (Villarrubia-Gómez et al. 2018). In particular, microplastics (very small pieces of plastic commonly defined as less than 5 mm in size) can have both physical and chemical effects on animals (Galloway et al. 2017). There is also a growing concern about the potential of microplastics to adversely affect human health. Plastic particles make their way into the food we eat, the water we drink, and the air we breathe. What happens to ingested plastic and any associated hazardous chemicals is a growing area of research (Lehner et al. 2019).

The international community is taking steps to address this global crisis

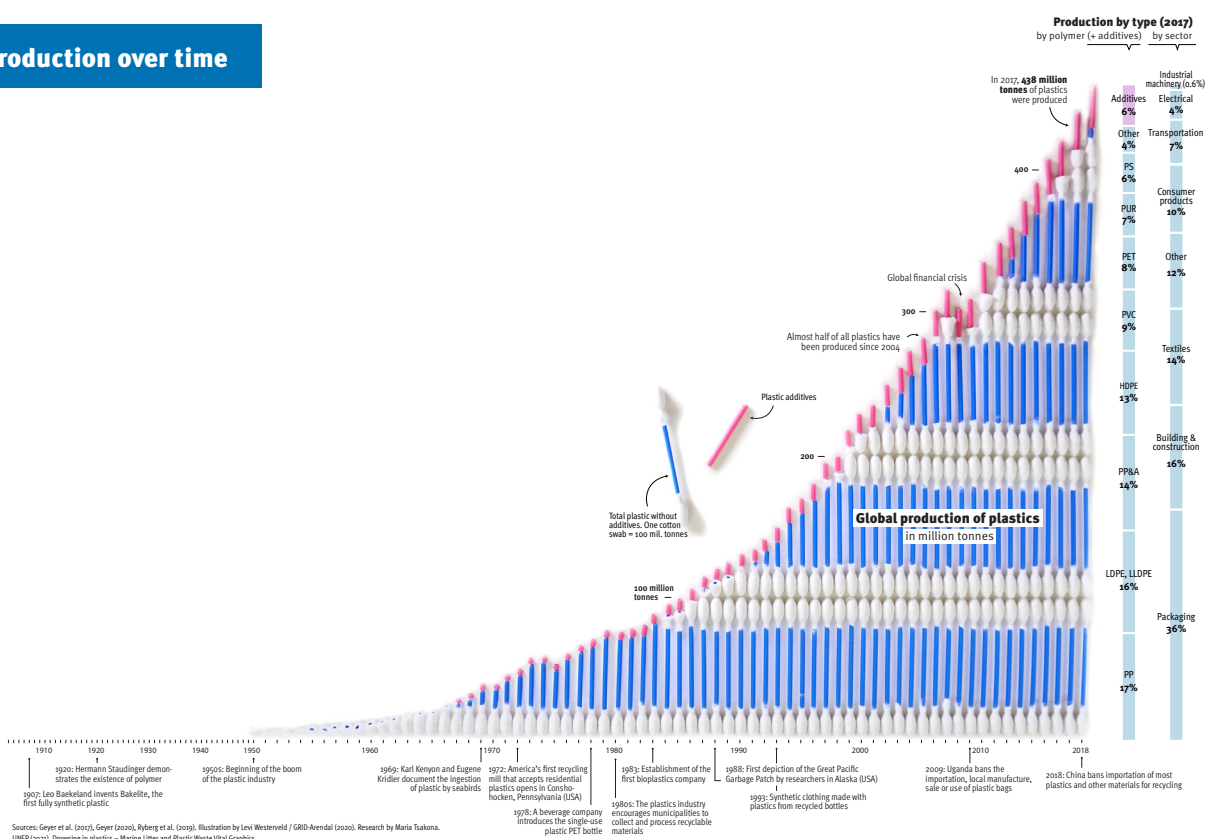
The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal is the only global legally binding instrument that currently and specifically addresses plastic waste. In 2019, the 187 Parties to the Basel Convention adopted by consensus the Plastic Waste Amendments. By extension, the legally binding provisions of the Basel Convention, which establish controls on the export and import of hazardous wastes and other wastes requiring special consideration, now apply to an extended scope of plastic waste. In addition to ensuring that transboundary movements of plastic waste is more transparent and better regulated, the Parties must take steps not only to ensure its environmentally sound management but also to tackle this waste at its source.

The Stockholm Convention on Persistent Organic Pollutants, which requires its 185 Parties to prohibit, eliminate and restrict the production, use, import and export of a number of hazardous chemicals, plays a pivotal role in reducing hazardous additives found in plastic, ensuring that it is safer for use and easier to recycle.

Going forward, the focus is on United Nations Environment Assembly, which will meet again in 2022 to discuss further international action to address the global plastic pollution crisis.

For more information, please visit: <http://www.basel.int/>

Plastic production over time





References

- American Chemistry Council (2019). 2019 Guide to the Business of Chemistry. American Chemistry Council. Washington D.C. <https://www.americanchemistry.com/GBC2019.pdf>. Accessed 15 November, 2021.
- Borrelle, St. B., Ringma, J. Law, K.L. Monnahan, C.C., Lebreton, L., McGivern, A.L., Murphy, E., Jambeck, J., Leonard, G.H., Hilleary, M.A., Eriksen, M., Possingham, H.P., Frond, H., Gerber, L. R.M., Polidoro, B., Tahir, A., Bernard, M., Mallos, N., Barnes, M., and Rochman, Ch. M. (2020). Predicted growth in plastic waste exceeds efforts to mitigate plastic pollution. <https://science.sciencemag.org/content/369/6510/1515>. Accessed 15 November, 2021.
- Euromap (2016). Plastics Resin Production and Consumption in 63 Countries Worldwide. <https://www.pagder.org/images/files/euromappreview.pdf>. Accessed 15 November, 2021.
- Galloway, T.S., Cole, M., and Lewis, C. (2017). Interactions of microplastic debris throughout the marine ecosystem. In *Nature Ecology and Evolution*. 1, 0116. <https://doi.org/10.1038/s41559-017-0116>. Accessed 15 November, 2021.
- Geyer, R., Jambeck, R.J., and Law, K.L. (2017). Production, Use, and Fate of all Plastics ever Made. *Science Advances*. 3, 7. <https://advances.sciencemag.org/content/3/7/e1700782>. Accessed 15 November, 2021.
- Geyer, R. (2020). Production, Chapter 2- Production, Use and Fate of Synthetic Polymers in Plastic Waste and Recycling. Letcher, T.M. (ed.). Cambridge, MA: Academic Press. pp. 13-22.
- ISRI (Institute of Scrap Recycling) (2020). Plastic resin production expected to decline by about 10% through 2020 due to impacts of coronavirus. ISRI virtual plastics spotlight examines effect of COVID-19 on producers and recyclers. *Recycling Products News* <https://www.recyclingproductnews.com/article/34169/plastic-resin-production-expected-to-decline-by-about-10percent-through-2020-due-to-impacts-of-coronavirus>. Accessed 15 November, 2021.
- Lebreton, L. and Andrady, A. (2019). Future scenarios of global plastic waste generation and disposal. *Palgrave Commun* 5, 6 (2019). <https://doi.org/10.1057/s41599-018-0212-7>. Accessed 15 November, 2021.
- Lehner, R., Weder, C., Petri-Fink, A., and Rothen-Rutishauser, B. (2019). Emergence of nanoplastic in the environment and possible impact on human health. *Environmental Science & Technology*. 53(4), pp. 1748-1765.
- McKinsey&Company, (2019). China's chemical industry: New strategies for a new era. <https://www.shorturl.at/uyGHJ>. Accessed 15 November, 2021.
- Pew Charitable Trusts and SYSTEMIQ (2020). Breaking the Plastic Wave. A comprehensive assessment of pathways towards stopping ocean plastic pollution. https://www.pewtrusts.org/-/media/assets/2020/07/breakingtheplasticwave_report.pdf. Accessed 15 November, 2021.
- Plastics Europe (2019). Plastics – the Facts 2019. An analysis of European plastics production, demand and waste data. <https://www.plasticseurope.org/en/resources/publications/1804-plastics-facts-2019>. Accessed 15 November, 2021.
- Resource Futures and Nextek (2018). Eliminating avoidable plastic waste by 2042: a use-based approach to decision and policy making. <https://www.circularonline.co.uk/wp-content/uploads/2019/06/Eliminating-avoidable-plastic-waste-by-2042-a-use-based-approach-to-decision-and-policy-making.pdf>. Accessed 15 November, 2021.
- UNEP (2018). Mapping of Global Plastics Value Chain and Plastics Losses to the Environment: With a Particular Focus on Marine Environment. United Nations Environment Programme. Nairobi, Kenya.
- Villarrubia-Gómez, P., Cornell, S.E., and Fabres, J. (2018). Marine plastic pollution as a planetary boundary threat—The drifting piece in the sustainability puzzle. *Marine Policy*. 96, pp. 213-220.

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