

Plastic leakage and greenhouse gas emissions are increasing

Inadequate disposal of plastic waste is the main driver of global plastic leakage, but microplastics, littering and losses from marine activities are also key concerns

Plastic pollution has now been documented in all the major ocean basins, beaches, rivers, lakes, terrestrial environments and even in remote locations such as the Arctic and Antarctic. Estimated global leakage to the environment (terrestrial and aquatic) was 22 Mt in 2019. This value is projected to double, reaching 44 Mt by 2060.

The vast majority are macroplastics, recognisable items such as beverage bottles, and most found their way into the natural environment as a result of inadequate collection and disposal. Other leakage routes include littering or fly-tipping, and marine activities. Microplastics, small pieces of plastic, less than 5 mm (0.2 inch) in length, also make up a sizeable share of total leakage, largely reaching the environment through wear to tyres and road markings, as well as the accidental loss of plastic pellets and washing of synthetic textile fibres.

These numbers stress the urgency of addressing waste management practices, while taking into account littering, leakage from marine activities and the steadily increasing microplastics leakage around the world.

The estimated stock of plastics in aquatic environments are already substantial and will increase further

Plastic leakage is altering marine and terrestrial ecosystems, whilst also posing substantial risks to human livelihoods that depend on the integrity of such environments, such as tourism and fishing. In 2019 alone, 6.1 Mt of plastic waste leaked into rivers, lakes and the ocean. As the bulk of plastics reach the ocean through rivers via a slow process that can take years or even decades, 109 Mt of plastics are estimated to have accumulated in rivers globally by 2019, with 1.7 Mt flowing into the ocean in 2019. While inflow estimates are lower than earlier studies that do not account for the residence time of leaked plastics in rivers, the amount is still alarming. With increasing plastics use and waste, the stock of plastics accumulating in aquatic environments is projected to more than triple from 140 Mt in 2019 to 493 Mt in 2060. Cleaning up these plastics from nature is becoming more difficult and costly every year, as plastics fragment into ever smaller particles.

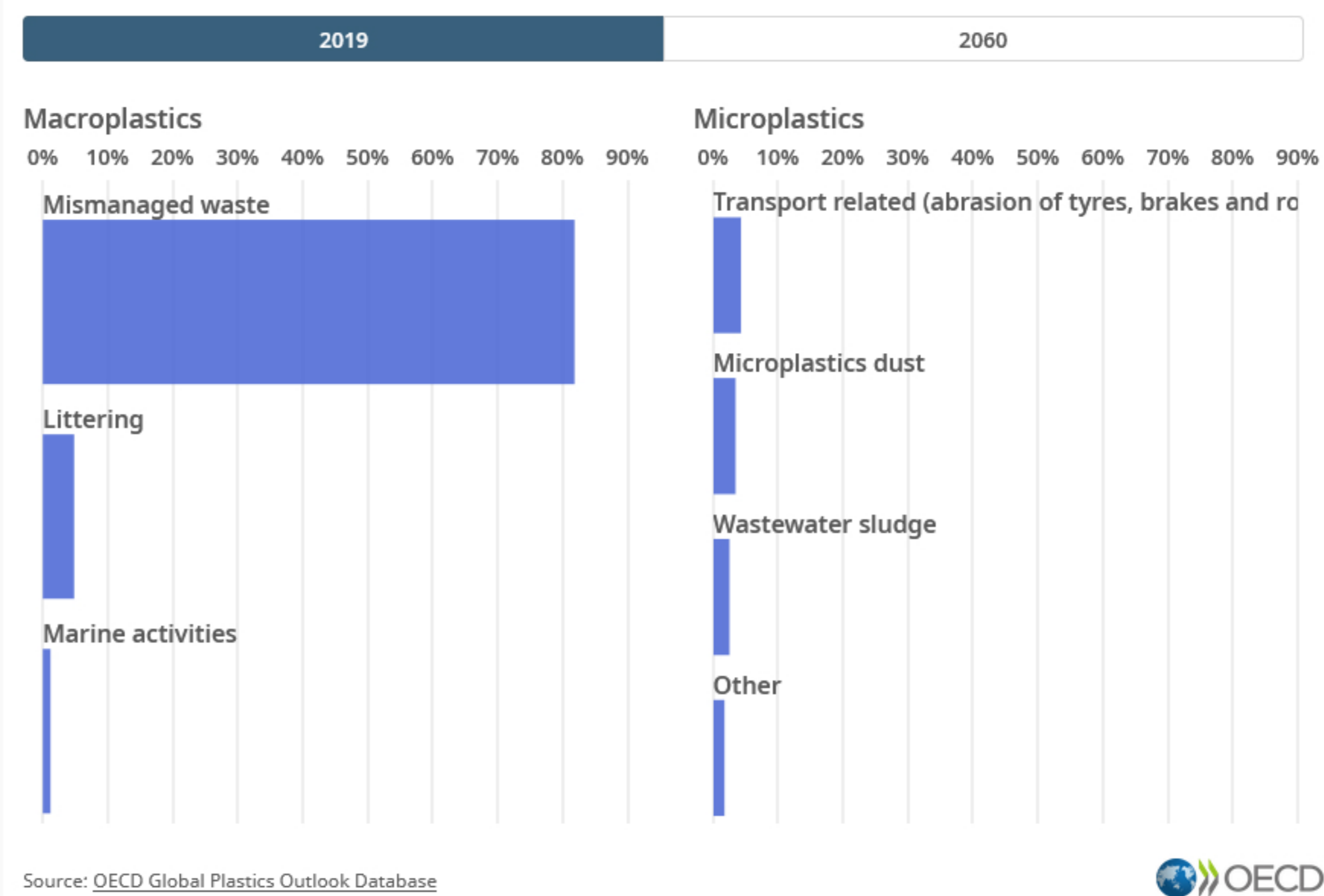
Throughout their lifecycle, plastics have a significant carbon footprint and emit 3.4% of global greenhouse gas emissions

Beyond the hazards posed to the marine and terrestrial environment as well as to humans, plastics are also a substantial contributor to global greenhouse gas emissions. In 2019, plastics generated 1.8 billion tonnes of greenhouse gas (GHG) emissions – 3.4% of global emissions – with 90% of these emissions coming from their production and conversion from fossil fuels. By 2060, emissions from the plastics lifecycle are set to more than double, reaching 4.3 billion tonnes of GHG emissions.

Furthermore, airborne microplastics have been found in remote regions, including the Arctic, where they may contribute to accelerated warming through absorbing light and decreasing the surface albedo of snow.

22 million tonnes of plastic leaked in the environment in 2019, and this estimate is projected to double by 2060

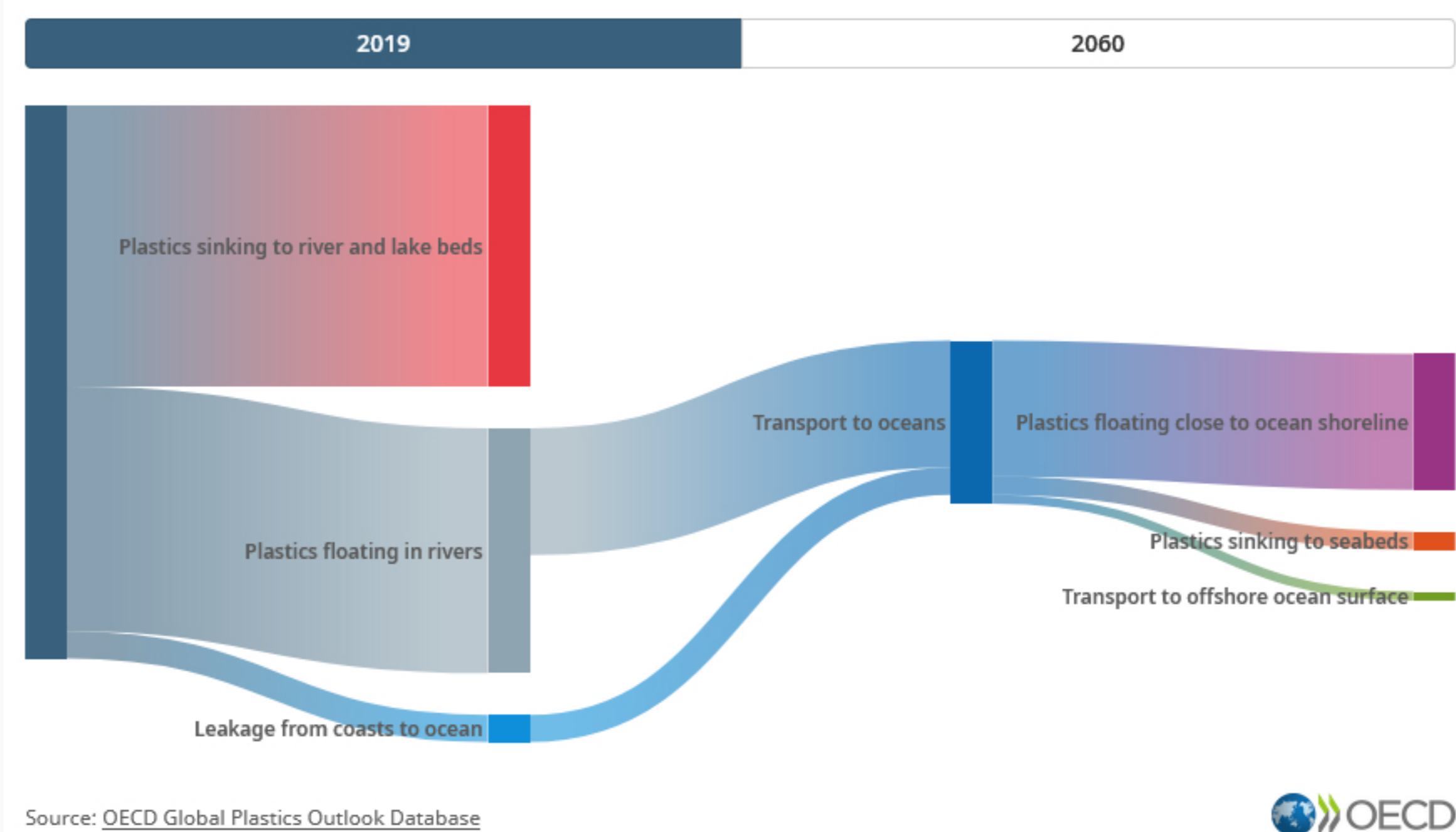
Distribution of leakages by type and source



Rivers are not only pathways to oceans, but also large storage places for lost plastics

Leakage of macroplastics from mismanaged and littered waste to aquatic environments, in million tonnes (Mt)

Mouse over the visualisation to see all the details



GHG emissions from plastics lifecycle will more than double between 2019 and 2060

GHG emissions in gigatonnes of CO2 equivalent

