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TITLE: Future scenarios of global plastic waste generation and disposal

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ABSTRACT:

Abstract The accumulation of mismanaged plastic waste (MPW) in the environment is a global growing concern. Knowing with precision where litter is generated is important to target priority areas for the implementation of mitigation policies. In this study, using country-level data on waste management combined with high-resolution distributions and long-term projections of population and the gross domestic product (GDP), we present projections of global MPW generation at ~1 km resolution from now to 2060. We estimated between 60 and 99 million metric tonnes (Mt) of MPW were produced globally in 2015. In a business-as-usual scenario, this figure could triple to 155–265 Mt y⁻¹ by 2060. The future MPW load will continue to be disproportionately high in African and Asian continents even in the future years. However, we show that this growth in plastic waste can be reduced if developing economies significantly invest in waste management infrastructures as their GDP grows in the future and if efforts are made internationally to reduce the fraction of plastic in municipal solid waste. Using our projections, we also demonstrate that the majority of MPW (91%) are transported via watersheds larger than 100 km² suggesting that rivers are major pathways for plastic litter to the ocean.

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