OOS2025-1111, updated on 26 Mar 2025
https://doi-org.ezproxy.library.wur.nl/10.5194/oos2025-1111
One Ocean Science Congress 2025

A source-to-sea governance assessment framework; the case of Tyre Wear Particles (TWP) regulation in the European Union

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Despite decades of regulatory efforts to limit marine pollution, levels of pollution are still high. Of particular concern in recent years is (micro)plastic pollution. Sources of microplastics are either intentionally added to products, such as cosmetic and personal care products, or released unintentionally, such as wear from textile, tyres and the breakdown of larger plastic items. Marine microplastic pollution is by nature transboundary which therefore requires collaborative and concerted efforts both within and between countries. Microplastic pollution has a strong land-sea interaction as much pollution enters the sea from land, via air and waterways. Addressing microplastics pollution thus requires a multifaceted governance approach that encompasses land-based manufacturing and trading sectors, transportation and urban planning, as well as consumer behaviour and waste(water) management systems. These fluid characteristics of microplastic pollution challenges conventional ways of assessing and understanding governance efforts to combat marine pollution. Given the vastness of the governance challenge of combatting pollution across land, water and sea and the multitude of pollution sources, the assessment of governance efforts requires a scope that extends from land to sea. In addition, to understand why marine pollution governance is failing, attention should be paid to actor interactions and power dynamics that explain the limited scope and effectiveness of existing governance efforts. Within the Horizon Europe project SOSZeroPol2030[1], we developed a source-to-sea governance assessment framework for fluid marine pollutants, such as microplastics. This framework covers potential sources and the source-to-sea pathways of/for marine pollution. Sources can be at the different life cycle stages of production, use, and end-of-life of materials and products as well as at their end-of-pipe release. The governance assessment framework takes as a unit of analysis a governance arrangement. A governance arrangement is the temporary stabilisation of the organisation and substance of a policy domain within which actors take and implement decisions. The concept allows to analyse how actors interact, subject to rules, discourses, and power dynamics. By identifying governance dynamics at and between different life cycle stages, we better understand how the architecture and power dynamics of governance evolve along the whole source-to-sea trajectory that pollutants take. We will illustrate the use of this framework with a case study of how the EU is governing a particular type of microplastics: Tyre Wear Particles (TWPs). The European Union adopted its European Green Deal (EGD) in December 2019 aiming to make the EU the first climate-neutral continent. Implementation of the EGD is done through

a set of strategies and action plans, one of which is the Zero Pollution Action Plan. The EGD zero pollution target is to reduce microplastics released into the environment by 30% by 2030. We will focus on the regulatory developments and governance dynamics of governance arrangements for respectively the production , use and end-of-life of tyres, as well as end-of-pipe TWP emissions.

[1] 'Source to Seas – Zero Pollution 2030' (SOS-ZEROPOL2030) is funded by the European Union's Horizon Europe programme under grant agreement No. 101060213

How to cite: van Leeuwen, J., van Hulst, F., Del Savio, L., Cowan, E., and Hendriksen, A.: A source-to-sea governance assessment framework; the case of Tyre Wear Particles (TWP) regulation in the European Union , One Ocean Science Congress 2025, Nice, France, 3–6 Jun 2025, OOS2025-1111, https://doi-org.ezproxy.library.wur.nl/10.5194/oos2025-1111 , 2025.

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