Chapter 21
Capturing Public Knowledge and Awareness From Data Models and Policies to Build Research Links Between EU and US Ocean Research

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ABSTRACT

Capturing the complexities of the common research challenges both the EU and US face is a goal of public policies when using as a framework the global risks posed by marine litter, particularly plastics. To turn the theory of industry 5.0 into practice, the full participation of all actors concerned with the use of ocean space could be useful to design research links between the initiatives launched by the European Commission and the American Federal Government. The chapter indicates that while a common data model is defined by the US Federal Agency specialized in dealing with the marine environment, the European focus is on interoperability between State Members. The research raises awareness on the marine plastic problem by recognizing that ocean literacy is critical to educate the public. Moreover, an examination concerning the discovery of these data (where this kind of marine litter data can be found), their access (confidentiality, intellectual propriety rights), and use (by the public sector, fisheries sector) are also offered in this study.

INTRODUCTION

As a potential vector for the transfer of persistent, bioaccumulative, and toxic pollutants, marine plastics' ecological risks encourage a more significant concern in the world of oceanographic data management, mainly because many of the impacts of plastic on the marine environment are only starting to be under-

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stood (Cózar et al., 2014). Public authorities can set up awareness campaigns, measures to prevent littering, and projects to clean up beaches. The results should be evaluated accordingly before using them as knowledge for investment and innovation in circular economy solutions. However, there is considerable regional variation in recycling rates between US and European data. Moreover, that is why a political interface to open up a discussion and find solutions should consider if an ecological risk assessment for plastics in the world's oceans can be conducted with data currently available, and because all lobby groups in the policy arena tend to use them, and because scientific knowledge has higher prestige than other forms of knowledge (Grundmann, 2017).

The pollutant-specific ("North-American") approach and the waste-specific ("EU") approach for reporting an off-site transfer of waste differ in that the US reporting system can provide better information which is not always easy to identify. In contrast, less detail will be reported by the EU systems mainly preoccupied with ensuring coherence and consistency between Member States (UNECE, 2005). However, the marine plastics framework provides a good insight into these differences and presents a rubric along which European and US initiatives can converge. This chapter could arguably bring marine plastic data management into focus as it extracts data requirements from the legal frameworks through the lens of knowledge management within the chaotic patterns of ocean dynamics (Barrieu & Sinclair-Desgagné, 2006).

LITERATURE REVIEW

In response to the current lack of a global repository of data on the distribution of marine plastic in our seas and oceans, industry 5.0 solutions can help provide the digital backbone instrumental in bringing the challenges of plastic pollution in the ocean to the international agenda (Jensen & Campbell, 2019). More precisely, they propose to leave the monotonous, repetitive challenges for mechanics and open up the creative side for humans (Breque et al., 2021). With this process of enhancing the capabilities of human workers, it is easier to infer the correct ontological structure, as the same classification of plastic waste can be done in different ways with different schemes that require manual analysis to compare them (Sawarkar & Kodati, 2021). An immutable source of data and a traceable and verifiable record of who is sharing what and with whom requires considering that the way open data systems for marine plastics is managed greatly influences how approaches to dealing with them are developed (Kerber & Kramm, 2022).

The conceptual approach of this study is that allowing parties interested to communicate on a common technological platform and vision must be stressed to address the factors at play in the marine plastics pollution problem (Barrowclough & Birkbeck, 2022). This problem arises from simultaneous cooperation and competition, which usually contrast with one another (UNEP, 2022). However, considering that European seas contain around 400 kg per km^2 of plastic and that over 13 000 pieces of plastic litter are floating on every square kilometer of the ocean (Macfadyen et al., 2009), marine plastic data management should be assigned higher priority as a powerful lever of change. Furthermore, oceans of plastic waste off the coasts of the United States and European countries have increased similarly to the level of plastic production until recently (Yohannan, 2020) (Eckstein, 2012). To increase knowledge levels concerning these ocean and coastal issues, with public and media campaigns, it is important to investigate potential explanations of the ocean knowledge gap to develop approaches to close it (Steel et al., 2005).