

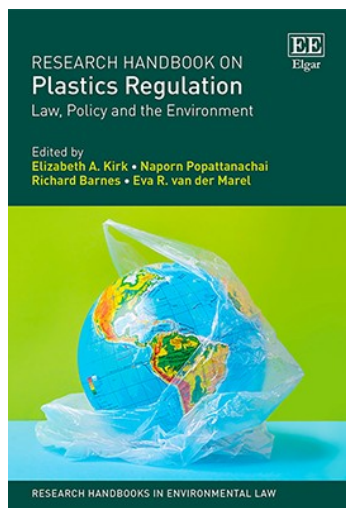
Research Handbook on Plastics Regulation – Law, Policy and the Environment

By Elizabeth A. Kirk, Naporn Popattanachai, Richard Barnes and Eva R. van der Marel (eds)

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The Research Handbook on Plastics Regulation offers a holistic perspective on the timely topic of plastics regulation and thereby closes a gap in legal scholarship. Until 2024, few books and longer papers had been published on the specific questions raised in this Handbook.¹ Regulating the growing amount of plastic waste, micro-plastics and also the environmental and health hazards related to the production and use

of plastic, is a pressing need in our world. The multi-fold everyday use of plastic relates to various areas of human and non-human life and our planet: health, food, clean water and marine environments, threats to biodiversity, impacts on climate and environment by petrol extraction industries, clean soil and air, but also trade, consumer law and patents. This is clearly reflected in the introduction chapter by the editors. While plastics have undoubtedly a value for our lives and economies and hold extraordinary opportunities for (sustainable) economic and social developments, at the same time they have a (partly still unknown) detrimental impact on the environment as well as human life and health (p. 1-2).²

The book is founded on the idea of a life cycle approach,

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¹ They include, albeit with a different focus or less comprehensive: Sarah Maria Denta, End Plastic Pollution and Plastic Waste – Regulations and Collaboration (2022) <<https://ssrn.com/abstract=4293313>>; Gerry Nagtzaam, Geert van Calster, Steve Kourabas, Elena Karataeva, Global Plastic Pollution and its Regulation: History, Trends and Perspectives (Edward Elgar 2023); Johanna Kramm, Carolin Völker (eds), Living in the Plastic Age: Perspectives from Humanities, Social Sciences and Environmental Sciences (Campus 2023).

² This reflects the statement by Inger Andersen, Executive Director of the UNEP, Press Release – 15 August 2025 <<https://www.unep.org/inc-plastic-pollution/media#PressRelease15Aug>>.

in order to reflect all stages of plastics in our everyday lives, from research to production to use to recycling to waste treatment and disposal, and in order to overcome the fragmented regulatory regime(s). At the moment, neither a comprehensive international legal instrument nor regional laws (like the EU) exist to tackle the whole life-cycle. The same holds true for domestic laws, which are mostly directed at medial (like water, air, nature) or causal (like emissions, waste) environmental protection. This leads to lacunas and sometimes also contradictions in regulatory regimes, as is demonstrated in several chapters of the book which look at plastics regulation either from the perspective of an environmental medium and its regulatory regime (Chapter 7 on the “law of the sea”; Chapter 6 on “biodiversity”) or from a legal system (Chapter 10 “European Union”; Chapter 15 “Kenya”). The editors tie these findings to their demand of an overarching, comprehensive (international) legal instrument (p. 3). The book therefore has a (not very hidden) political agenda, however, this does not lessen the scientific and academic output of the analyses in the chapters, it rather gives them a direction. Most chapters conclude with explicit or at least implicit views on the implications for international plastics regulation: Chapter 2 on the right to health demands a more human rights oriented international treaty (p. 33-35). As law often seeks to provide a comprehensive and consistent solution, the intended holistic view and aim for a holistic solution is understandable – even more so against the background of the international political debates in front of the UNEA. Yet, throughout the Handbook, it is unclear whether such an approach is feasible or even the best solution due to the many connecting

factors between plastics and law.

Plastics regulation needs to be put into context and needs to be reflected in very different areas of law, especially as long as there is not one overarching (international) legal instrument. The editors therefore group the chapters around key themes (p. 8-15), which are less regulatory demands, but the results of the analyses in the chapters: (1) fragmentation and patchy regulation, (2) advocacy of a systemic approach and the failure to address the problems in a holistic manner, (3) need for scientific understanding and research of plastics and (4) need for societal and equitable justice with regard to plastic use. As the editors concede, these key themes put palpable pressure on the draft treaty and at the same time show that one treaty will probably not be sufficient, but rather that other international and regional instruments need to be enhanced in order to create a complete regulation (p. 13). This is certainly an astute finding.

The asserted regulative fragmentation – both thematically and instrument-wise – is reflected in the structure of the book: Part I paints the larger picture by putting plastics into a wider, not necessarily strictly legal context: plastics and health (Chapter 2), plastics and food (Chapter 3), and plastics and petroleum (Chapter 4). Chapter 2 connects to the life-cycle approach promoted in the introduction by highlighting the risks to human health from production to use, from disposal to environmental pollution, before analysing these risks from a human rights perspective. It examines not only the right to health, but also the enjoyment of various human rights that can be adversely affected by plastics, while highlighting the problem of unequal risks (p. 24).

Part II takes the perspective of general (international) legal regimes and mainly asks the question, whether at the moment certain aspects of the plastics life cycle are already sufficiently regulated in international law. From the holistic view the book intends to take, Chapter 5 (“Considering the plastics problem from an Earth system (law) perspective”) is the logical and consistent introduction into Part II: The Earth system approach tries to address the problem that classical environmental law does not reflect the complex interwovenness of the environment and can therefore not lead to all-encompassing solutions that are needed (p. 80-81). As the fragmentation and gaps in plastics regulation are one of the key themes, it makes sense to use this approach. It links to an analysis from the point of view of planetary boundaries, which has so far been mostly used in regard to climate change, but can – as in Chapter 5 – be understood more broadly as ‘defining the “safe operating space” for humanity with regard to nine Earth system processes’ (p. 82), which are also closely linked to the impacts of plastics on the environment. Whereas highlighting these impacts seems a bit repetitive, the transfer of the Earth system approach on global regulative models (p. 86 ff.) is very astute and interesting to read, especially the remark that treating plastics as a commodity in international trade law acerbates the problem as it has the potential to hinder national legal measures (p. 89). The same holds true for the mainly anthropocentric focus – a truer remark, however not very surprising from an Earth law perspective. Yet, the chapter is very descriptive and not very analytical, this is to say it names complex challenges, but offers little suggestions for regulation apart from

the concept of ‘adaptiveness’ (p. 95 f.), developed in parallel to the Montreal protocol as best practice especially in the treatment of scientific uncertainty by law.

The next four chapters take fewer overarching approaches, but rather evaluate the proposed draft treaty from the perspective of biodiversity law (Chapter 6), law of the seas (Chapter 7), international trade (Chapter 8) and patent law (Chapter 9). Although this choice covers quite a few of the relevant areas, it demonstrates a) that there are still huge lacunas in international environmental law (e.g. waste disposal) and b) that trade law plays a crucial role in the regulation of plastics. Chapter 6 criticizes the focus of the research activities on the protection of marine species and the pollution of the oceans, while mostly disregarding freshwater and terrestrial environments (p. 104). This is certainly a correct assertion, however, specific treaties might be easier to accomplish and implement, so a medial instead of a causal approach to environmental protection might be the way forward for at least a partial international instrument. The chapter highlights that existing treaties already cover parts of the legal questions raised, but have their limits that should and could be addressed by an additional international instrument such as the draft treaty. In this respect, due to many risks for biodiversity stemming from plastics, a single regulatory regime is difficult and the Biodiversity Convention (CBD) cannot cover all risks and dangers (p. 107 f.). The same holds partly true for other instruments. For instance, the Maputo Convention on African wildlife is mostly concerned with the prevention of land degradation and thus could help to conserve soil, however, it has only

few signatories and has some further drawbacks - although it would be best suited for a global region that bears the brunt of plastic pollution (p. 112).

Chapter 7 analyses the existing international framework against so-called "ocean plastics", and rightly frames as a 'transboundary and common pollution problem' within a complex regulatory setting with more than one pertinent treaty (UNCLOS, MARPOL Convention) and additional non-binding guidelines. This chapter emphasizes yet again the key problem of fragmentation and lacunas, which is in the law of the seas intensified by the lack of implementation and enforcement of the existing norms (p. 126). The latter is certainly true, not only for the law of the seas, but one might doubt, if the intended new treaty would remedy the enforcement gap, if its content is already fiercely contested in the INC drafting sessions. The chapter contains a very clear and structured analysis of the 5 main problems of the existing law (p. 126 ff.), and also mentions one of the few real success stories: the provisions in the London Protocol of 1996 against the dumping of waste at sea (p. 131), which might serve as a best practise example with its reverse listing procedure on dumping activities (p. 131).

Chapter 8 sheds some light on the international trade regime and its importance for the whole life cycle of plastics. International trade, if construed rightly, could further a transformation towards a more sustainable and equitable economic model for plastic products (p. 145). It demonstrates that the regulation of export of plastic waste (mostly to China, which has effectively banned all imports since 2017) has yielded a reform of EU waste trade rules, which might help to establish a more

sustainable business model (not only for) plastic waste exports and circular economy. The chapter observes rightly that a WTO-conform regulation of the waste market is essential and could be promoted by coherent international rules and definitions (inter alia of waste categories, like in the EU) but limits the solution mainly within the WTO system (p. 166).

The largest part, Part III, looks at regional and domestic legal systems and their existing plastics regulation. It provides an in-depth overview of various possible regulative and governance models, some more successful than others. All chapters are a useful, albeit not encompassing collection of ideas for drafting an international instrument. Obviously, the editors had to make a choice - the criteria for this choice remain a bit unclear, but might recur to best practises (Oceania, Kenya, with aspirations towards circular economy according to Chapter 15, maybe also the UK) and insufficient responses (EU - Chapter 10, North-East Atlantic, Arctic, Africa - Chapter 14, and also China as the world's largest producer, p. 330) on the one hand, and biggest polluters (e.g. the Philippines) or producers (China - Chapter 17) most adversely affected (Arctic, Oceania with the Pacific Island Countries in particular, Africa, and also China, which led to increasing legislation, p. 353) on the other hand. Overall, it covers examples from four continents (with a striking omission of the Americas) and four domestic systems, and is therefore rather comprehensive. It displays a clear balance between Global South and Global North. An interesting analytical tool is proposed in Chapter 11 on the North-East Atlantic region: it describes - as regards international protection of the marine environment - two governance models:

the decentralised-relational (UNCLOS) and the institutional-communitarian (OSPAR Convention), p. 212 f. They are not exclusive, neither is there a clear link between them – for effective protection, however, more coordination and cooperation between the regimes would be useful.

The same problem is raised by in Chapter 12 concerning plastic governance in the Arctic, one of areas critically affected not only by climate change, but also by plastics pollution (p. 229 f.). In this region the disregard for indigenous and local knowledge in governance adds to the environmental challenges and ineffective decision-making (p. 244 f.). This is contrasted in an account on Oceania in Chapter 13 and the importance the regional legal frameworks put on a healthy, diverse, and productive marine environment, which is intrinsically linked with the livelihoods and culture of the Pacific Island Countries (p. 248). The focus lies on the regional solutions to eight identified sources of marine pollution by plastics (fishing and shipping vessels, cruise ships, transboundary waste, food containers, general plastic waste, tourist enterprises and natural disasters, p. 248) and the approaches taken in the regional Marine Litter Action Plan as well as national legislation. Overall, the chapter sees great potential in the regional solution, also because indigenous and local experiences are included and a strong cooperation between the various states is followed (p. 270 ff.). Chapter 16 analyses the use of the precautionary principle in the Philippines, as it is the guiding principle in the ESWM Act on the avoidance and reduction of waste via solid waste management (p. 322). It demonstrates that especially before the courts it can be a useful way to

tackle plastic pollution by law (p. 328 f.), which might also be a solution for an international instrument. A policy-oriented and socio-legal analysis is offered by in Chapter 18 on the UK: it shows how through media attention and awareness-raising a window of opportunity opened for the regulation of single-use plastics. This adds a very interesting perspective to the otherwise rather doctrinal and theoretical oriented book and proposes a suitable analytical tool.

Part IV concludes the research handbook with two overarching chapters on the future of circular economy and plastics regulation. They show the proposals of the authors also for the future international instrument – written at a time where there was still hope for a speedy accomplishment. The research handbook was published in 2024, with an international binding instrument on plastic pollution, including the marine environment, developed by an International Negotiating Committee (INC) mandated by the UNEP, in view. This was not too unrealistic, as in 2022 the UNEA had published recommendation 5/14,³ which lead to the drafting of an international instrument on plastics regulation. There were hopes that the second part of the 5th session in August 2025 in Geneva, Switzerland, would finally lead to an agreement, however, the session was adjourned without a consensus on the text of a potential treaty. Although these hopes have somewhat vanished in August 2025, demonstrating the lack of consent between the states and

³ Resolution adopted by the United Nations Environment Assembly on 2 March 2022 End plastic pollution: towards an international legally binding instrument UNEP/EA.5/Res.14 (7 March 2022).

variety of possible approaches also reflected in the book, the handbook needs to be valued for its in-depth analysis and proposed solutions from many and diverse legal regimes and legal orders as well as research approaches.

The discussions in the book on the proposed treaty, based on the draft texts from sessions 2-4,⁴ might seem, on the first impression, a bit dated, however, considering that a) the negotiations are still ongoing and b) the topic is as important as ever, the intended holistic view and, more vital, the various proposals for a solution, taking into account what has already been accomplished in the drafts, are still worth of consideration. It will hopefully inform the INC when resuming the 5th session under a newly elected chair (INC-5.3).

⁴ UNEP/PP/INC.5/4 (9 July 2024).

