PLASTIC WASTE PREVENTION: DEFINITION AND BARRIERS

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The significance of waste prevention

Waste prevention has become a key element in the transition towards a circular economy[1], as it saves money, avoids littering, conserves natural resources and reduces consumption's negative effects on the environment[2]. It has also started to gain in importance in plastics field.
Within the Waste Framework Directive (Directive 2008/98/EC), Article 4 establishes the waste hierarchy as the overarching principle of waste policies among European Member States. Waste prevention is placed at the top of the pyramid of priorities, followed by 'preparing for reuse', 'recycling and other recovery', and 'disposal' as the least desirable option. Waste prevention is defined along three dimensions, which are quantitative, qualitative and prevention aimed at reducing hazard risks.[3] The amended Waste Framework Directive (Directive (EU) 2018/851) reiterated the importance of waste prevention by confirming its place as a top prime concern for waste legislation. In the revised Directive, the European Commission has confirmed the strategic importance of waste prevention, also in the context of the circular economy, and has especially highlighted the field of plastic waste prevention as a specific priority.[4]
Waste prevention can occur in all stages of the value chain: design, extraction, production, distribution, consumption and waste management. All societal actors, including product manufacturers, businesses and institutions, individuals and communities may express specific waste prevention behaviours.
In Strategic Waste Prevention Reference Manual (2000), the OECD distinguished between waste prevention and strategic waste prevention, introducing an important conceptual distinction. Waste prevention refers to three types of practical actions, i.e., strict avoidance, reduction at source, and product re-use. Strategic waste prevention is a policy concept that concretely situates waste

[1] EEA, 2015
[2] Conn, 1977
[3] Directive 2008/98/EC
[4] EEA, 2019

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prevention within a long-term resource management and sustainable development perspective. Strategic waste prevention works toward the reduction of absolute waste amounts, hazards, and risks, as appropriate. It is characterised by life cycle perspective, a material-differentiated approach, the substantive integration of social and economic aspects into environmental policy discussions on waste prevention and the institutional mechanisms that facilitate co-operation across traditional institutional structures in ways that induce greater waste prevention, and overall policy synergy.
As stated by the European Commission, waste prevention is a crosscutting area of policymaking and has direct relevance to a considerable number of already established policy areas, both in the field of the environment as well as specific primarily nonenvironmental areas.[5]
Thus, the legislative framework governing waste prevention includes a long list of different Directives and Regulations. Moreover, the legislation on plastic waste prevention is fragmented into a multitude of policies (plans, strategies, directives). The legislative framework is in evolution.

Analysing waste prevention

Within the scope of the activities performed by the University of Bologna, an analysis of the European legislative documents has been performed, mapping the type of prevention and the value chain steps involved (Design, production, consumption, waste management) for each document. The results show that the commitment of European Commission on plastic waste prevention is growing. As an example, the European strategy on plastics promotes quantitative plastic waste prevention through reuse and recycle, setting an ambitious target: having all plastic packaging reusable or recyclable in a cost-effective manner by 2030.[6] Moreover, the main objective of decoupling waste generation from economic growth is underlined.
Other examples of Directives, which boost quantitative plastic waste prevention, are the Directive on plastic bags[7] and the recent Directive on SUPs[8], which introduces ban or taxes on certain products. In addition, it sets some constraints on other products, as providing information to consumers, using market-based instruments and meeting some product design requirements, depending on the item and available alternatives. It addresses single-use plastic items through a range of policy measures, including market restrictions.
Qualitative plastic waste prevention is boosted through many legislative interventions, with a multitude of different measures: from Extended Producer Responsibility (EPR) to Best Available Technologies (BATs), Product Environmental Footprint (PEF) and so on. Generally, it is possible to distinguish between direct policy on plastic, integrated policy on product and policy on waste.

[5] European Commission, 2012
[6] COM/2018/028
[7] Directive (EU) 2015/720
[8] Directive (EU) 2019/904

Barriers of waste prevention

The review of legislation together with an extensive literature review of plastic waste prevention has lead to the mapping of some barriers to plastic waste prevention.
Firstly, there is a difficulty in measuring prevention and in communicating information about it. The autonomy which each member State has in creating an own set of targets and monitoring systems leads to varying data on waste prevention among the European countries. There is inadequate information on plastic waste prevention, as indicators and reliable databases are missing. At product level, non-existing or poorly conceived environmental labelling might contribute to information failure or to confusion for consumers.
Secondly, the focus is on end-of-pipe measures, sometimes prioritizing recycling over prevention, instead of promoting dematerialization and decoupling. This has contributed to a distorted perception of the consumer, preferring recycling rather than prevention. As an example, prevention has not received great effort at economic level neither.
Thirdly, there is a lack of system thinking, which takes into account environmental, economic and societal costs and benefits of policy interventions and compares these to the costs of inaction. For example, dematerialisation is usually not supported by manufacturing industries, as it results in a reduction of turnover. However, the legislator should consider overall net social costs (i.e., private plus external costs) of the system in decision-making. A harmonized vision on sustainable and circular plastic matters is lacking. In addition, consumers are not involved enough in prevention policy.

Insights for the future

In conclusion, it can be said that the underperforming status on plastic waste prevention requires to accelerate the implementation of any process of change. Waste governance would benefit from adopting a clear definition of plastic waste prevention and from creating a massive long-term strategy on resource efficiency. At a policy level, the legislation should be focused on supporting innovation, rather than on waste management. Different strategies and measures should be prioritized and implemented in each sector. Priority should be given to the most impactful plastic-based products, such as SUPs and non-recyclable plastic products. Firstly, dematerialization should be discussed; secondly, ecodesign and designing out of waste might be considered. More commitment should be undertaken also at research level, especially regarding the evaluation of impact on environment and health of substances used to improve the plastic properties.

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