
Developing Legislation to Prevent Environmental Damage from Products

A Herculean but Necessary Task

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1.1 Why a Book about Product-Oriented Environmental Law?

While laws relating to the environment have been around for centuries, it could be argued that modern environmental lawmaking started in the 1960s, when many nations began adopting acts specifically targeting the environment. The evolution of environmental law since then has followed several paths, from mainly local regulations to national, European and global laws; from a mere focus on environmental issues to a broader sustainability approach; from the regulation of point sources to increased regulation of diffuse emissions; and from command-and-control regulations to flexible legal and economic mechanisms. A frequent observation is that environmental law needs constant revision in order to keep abreast of new challenges and trends.¹

This book is devoted to one of these trends in environmental law: its increasing focus on products. National and global environmental problems are increasingly the result of mass production and consumption. Products can have an adverse impact on the environment during different phases of their life cycle, including the extraction of raw materials; refinement and processing of materials; production of components and products; transport; and retail, use and final disposal. Not least, in the globalized economy, the negative effects of the trans-frontier transport of materials, products and waste are also on the rise.

¹ D. Esty, 'Red lights to green lights: From 20th century environmental regulation to 21st century sustainability' (2017) 47 *Environmental Law* 1–80.

The environmental impact of an individual product is insignificant in itself, but the cumulative effect of numerous products at the local as well as the global levels can be disastrous. Nevertheless, these cumulative effects are rarely internalized in the price of the product. This constitutes a market failure that leads to excessive consumption and production and to unacceptable environmental problems. Resolving these problems in an environmentally effective and economically efficient way, while also treating the various stakeholders involved fairly, is a major political and legal challenge.

To correct this market failure and limit the environmental effects of products, some sort of public intervention or regulation is necessary. However, this is difficult given the nature of the problem and the sheer number of products and players involved in the production, marketing and disposal of products. Also, the environmental effects of products may be complex and difficult to identify and quantify contrary to pollution from more clearly defined, often stationary sources with a limited number of responsible actors. The possibility to assess environmental effects and entailing costs and to find the most suitable abatement measure will prove a much more difficult task with regard to products. For these reasons, it is not surprising that the development of product-oriented environmental law has followed a long and tortuous path. Owing to the variety of issues involved, such as pollution from manufacturing, energy use and waste generation, and to the specificity of the different types of products, such as food, packaging, electronics and chemicals, regulating the damage caused by products is truly a Herculean task.

As a step towards meeting this challenge, the concept of ‘life cycle thinking’ has emerged as a fundamental and particularly useful approach. Life cycle thinking reflects a particular perception of environmental problems which puts the product itself centre stage, through all of its life cycle phases and associated environmental impacts.²

Laws based on life cycle thinking seek to minimize the cumulative environmental effect of products at every stage of their life cycle. This thinking builds on certain recommendations:³

² Cf. E. Heiskanen, ‘Translation of an environmental technique: Institutionalization of the life-cycle approach in business, policy and research networks’, PhD thesis, Helsinki School of Economics and Business Administration (2000).

³ For a more elaborate discussion and examples of how these approaches have been employed in lawmaking, see C. Dalhammar, ‘The application of “life-cycle thinking” in European environmental law: Theory and practice’ (2015) *12 Journal for European Environmental & Planning Law* 97–127.

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- 1 The laws regulating products should induce manufacturers and other actors in the product chain to innovate in product development and design products and processes that minimize environmental impacts through the life cycle (e.g. ecodesign, use of chemicals, energy efficiency, ecolabels).
- 2 Improvement in one part of a product's life cycle should not increase the product's environmental impact during another life cycle phase ('life cycle optimization').
- 3 Laws should encourage or mandate cooperation and information sharing among actors in product chains that will lead to environmental improvements.⁴

Life cycle thinking is supported by Life Cycle Assessment (LCA). Whereas life cycle thinking is a qualitative approach, LCA is a quantitative method that can be used to assess the environmental impact associated with all the stages of a product's life from cradle to grave.⁵ Although it is often a complex exercise, LCA is increasingly used as a guide in life cycle thinking while also informing EU product regulations.

Although the concept of life cycle thinking has no formal definition in European Union (EU) law, it has been embraced by the European Commission in several documents. It was institutionalized in 2001 with the adoption of the Integrated Product Policy (IPP),⁶ with the Commission stating in its 2003 Communication on IPP, 'For IPP to be effective life-cycle thinking needs to become second-nature for all those who come into contact with products.'⁷

The EU product laws are addressing more and more factors, including chemicals in products, the proper recycling of products, the energy efficiency of products and, more recently, the minimum durability/lifetime of products.⁸ The EU recently also endorsed the concept of the Circular Economy (CE) in a Commission Communication from 2015,⁹ which

⁴ A 'product chain' can be understood as all the actors and processes involved in the entire product life cycle, including those dealing with the materials and transport; for a more detailed discussion, see F. Boons, 'Greening products: A framework for product chain management' (2002) 10 *Journal of Cleaner Production* 495–505.

⁵ The International Organization for Standardization (ISO) provides guidance for conducting LCAs through its standards in the ISO 14040 series.

⁶ IPP was introduced through the Green Paper on Integrated Product Policy, COM (2001)68.

⁷ Commission Communication on Integrated Product Policy Building on Environmental Life-Cycle Thinking, COM 2003(302) final, p. 10.

⁸ See Chapter 3 in this volume.

⁹ Commission Communication, 'Closing the loop – an EU action plan for the Circular Economy', COM (2015) 614 final.

systematically reviews policy and regulatory measures to be adopted at the various stages of the product's life cycle in order to reconcile economic growth with environmental preservation and ultimately close the product loop.¹⁰ The European Commission's Action Plan on CE also envisions ecodesign requirements of a more mandatory nature related to product lifetimes and resource efficiency.¹¹ This process has already started with the setting of legal standards on durability for vacuum cleaners and lighting products under the Ecodesign Directive.¹²

Product regulation is also increasingly important in climate policy and in the search for climate-friendly solutions in all sectors. For example, there is some evidence that the Ecodesign Directive¹³ is – currently – the best-performing instrument in EU climate policy.¹⁴ According to some researchers, similar policies that mandate energy efficiency for products, buildings and vehicles are the best-performing climate policies in the US.¹⁵

In light of these trends, other product regulations covering new environmental factors are certain to emerge in the near future.

While product-oriented environmental law is developing at a rapid pace, no contemporary legal textbook devoted solely to the topic has been published,¹⁶ despite several relevant reports and articles.¹⁷ The aim of this

¹⁰ Chapter 2 in this volume discusses in more detail the concept of the CE and the EU scheme.

¹¹ *Ibid.*

¹² See Chapter 3 in this volume. The issue of regulating planned obsolescence is discussed in more detail in E. Maitre-Ekern and C. Dalhammar, 'Regulating planned obsolescence: A review of legal approaches to increase product durability and reparability in Europe' (2016) 25 *RECIEL* 3, 378–94.

¹³ Directive 2009/125/EC of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products, OJ L 285, 31 October 2009, p. 10 (Ecodesign Directive). Under this directive, mandatory energy efficiency standards for various product groups are set through regulations; for further details, see Chapter 8 in this volume.

¹⁴ This is discussed in more detail in Chapter 8 in this volume.

¹⁵ N. Sachs, 'Can we regulate our way to energy efficiency? Product standards as climate policy' (2012) 65 *Vanderbilt Law Review* 1631–78.

¹⁶ There are, however, some older textbooks of relevance, such as F. Oosterhuis, F. Rubik and G. Scholl, *Product Policy in Europe: New Environmental Perspectives* (Dordrecht: Kluwer Academic, 1996). Ludwig Krämer was breaking new ground when he devoted a chapter to product-related environmental law in his textbook on EC environmental law. See L. Krämer, *EC Environmental Law*, 5th edn (London: Sweet & Maxwell, 2003) (and subsequent editions).

¹⁷ There are too many to mention here, but useful examples include M. Onida, 'Products and the environment', in R. Macrory (ed.), *Reflections on 30 Years of EU Environmental*

book is therefore to provide an overview of European legal developments in product-oriented law, to present new research on emerging themes and to outline opportunities and challenges for the future. It contains a mix of theoretical and practical approaches. It is our hope that the book will become a valuable source of knowledge for researchers, practitioners and students.

1.2 The Development of Product-Oriented Law

Product-oriented law with an environmental perspective is a truly manifold and complex legal field at national and regional as well as at international levels.

It can be systematized in many ways. One way is simply to divide the field into three main parts with reference to their primary objectives:

- limiting dispersion of hazardous substances;
- limiting the final disposal of products as waste;
- limiting the consumption of natural resources.

These objectives are often interrelated, of course. As will be shown in later chapters, many instruments regulating products may have several objectives and serve several purposes. There may be synergies, but also contradictions and conflicts, between policies and rules with different objectives. Thus, this brief presentation should only be regarded as a simple introduction to the topic.

1.2.1 Limiting Dispersion of Hazardous Substances

An important aspect of regulating products has long been the desire to limit and control chemicals and other hazardous products and substances to protect both human health and the natural environment from chemical pollution. The rules range from prohibition of certain substances and products to limit values for substances in products, obligations to assess the properties and effects of substances in products as well as to provide information about them, limits to the use of certain products, systems

Law: A High Level of Protection? (Groningen: Europa Law Publishing, 2006); D. Misonne et al., *Legal Constraints on National Measures to Promote Environment-Friendly Products* (Brussels: Belgian Science Policy, 2004); A. Nilsson et al., *An Integrated Product Policy in the EU – Some EC Legal Conditions*, Report 5338 (Stockholm: Swedish EPA Press, 2003); M. Pallemarts et al., *The Role of Public Authorities in Integrated Product Policy: Regulators or Coordinators?* Report (Brussels: Belgian Science Policy, 2006).

of authorization for certain types or certain uses of product and specific rules on use, transport, labelling and final disposal of the substance as waste.

States started regulating the use of chemicals as far back as the 1960s, in particular substances in food and feed and chemicals used in agriculture. These laws have steadily included new types of product. The extremely rapid creation and distribution of new chemicals on the market and in all kinds of product are a huge challenge. The need to get a grip on these developments by issuing strict, harmonized rules has long been recognized, not least because of the cross-border nature of the international trade in hazardous products and subsequent problems.

In the European Union, as the weakness and fragmentation of existing legislation became increasingly evident, steps were taken around the year 2000, eventually leading in 2006 to a very comprehensive and in many ways ambitious regulation known as REACH.¹⁸ It establishes a complex and demanding mechanism of Registration, Evaluation, Authorization and Restriction of chemicals already on or destined for the market.¹⁹ The 2008 EU regulation on classification, labelling and packaging of substances and mixtures,²⁰ based largely on a directive from as far back as 1965, is also highly relevant. Furthermore, since 1970, the EU has issued regulations concerning air pollution emissions²¹ and noise²² from motor vehicles and other types of vehicles and equipment for use outdoors.²³ Masses of product standards have been laid down in regulations on, for example, the content of chemicals in food, toys and other everyday consumer products. EU regulations and directives are usually designed with

¹⁸ Regulation (EC) 1907/2006 of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, OJ L 396, 30 December 2006, p. 1.

¹⁹ Chapter 11 in this volume discusses REACH in more detail.

²⁰ Regulation (EC) 1272/2008 of 16 December 2008 on classification, labelling and packaging of substances and mixtures, OJ L 353, 31 December 2008, p. 1, often referred to as the 'CLP regulation'.

²¹ Now Regulation (EC) 715/2007 of 20 June 2007 on type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information, OJ L 171, 29.6.2007, p. 1.

²² Originally Council Directive 70/157/EEC of 6 February 1970 on the approximation of the laws of the Member States relating to the permissible sound level and the exhaust system of motor vehicles, OJ L 42, 23.2.1970, p. 16, with later amendments and the latest Commission directive 2007/34/EC of 14 June 2007, OJ L 155, 15.6.2007, p. 49.

²³ Directive 2000/14/EC of 8 May 2000 on the approximation of the laws of the Member States relating to the noise emission in the environment by equipment for use outdoors, OJ L 162, 3.7.2000, p. 1.

full harmonization in mind and therefore tend to have a defining influence on the national legislation of EU Member States.

At the global level, several major treaties aimed at reducing pollution from hazardous products have been negotiated and adopted in recent decades. They cover substances representing a threat to the global environment by virtue of their toxicity and persistence, dispersibility and tendency to accumulate in nature. The most important of these agreements are the 1985 Vienna Treaty for the Protection of the Ozone Layer²⁴ and the 1987 Montreal Protocol with later adjustments, the 1998 Rotterdam Treaty on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade,²⁵ the 2001 Stockholm Convention on Persistent Organic Pollutants²⁶ and, not least, the 2013 Minamata Convention on Mercury. There is also a globally harmonized system of classification and labelling of chemicals under the UN (GHS). These agreements have been influenced by, and in turn have also influenced, national and regional rules and regulations.

1.2.2 *Limiting the Final Disposal of Waste*

The environmental problems of many types of products tend to appear when the products reach the end of their lives. Disposed of as waste, the hazardous substances products contain can be released into the environment. In our ‘throw-away-society’, treating waste safely and responsibly has become a huge task. Waste of all kinds ends up in the natural environment, as well as in urban areas, and accumulates in the oceans. It is therefore important in the exploitation of natural resources to provide incentives for businesses to use resources rationally by recycling and re-using them as much as possible. It is not surprising that waste management has been at the core of environmental regulation from the start. In the EU, the Commission acknowledged the need for regulation as early as 1972, with the First Environmental Action Programme, followed in 1975, by the first Directive on Waste.²⁷

Policies on the disposal of products as waste pursue *two main objectives*: to prevent waste generation and to promote waste recovery. The

²⁴ United Nations, Treaty Series, vol. 1513, p. 293.

²⁵ *Ibid.*, vol. 2244, p. 337, as amended. ²⁶ *Ibid.*, vol. 2256, p. 119.

²⁷ First Environmental Action Programme (1973–76), OJ C 112, p. 1, Chapter 7, Section 1; Council Directive 75/442/EEC of 15 July 1975 on waste, OJ L 194, 25.7.1975, p. 47. See also L. Krämer, *EU Environmental Law*, 7th edn (London: Sweet and Maxwell, 2011), p. 329.

waste management ‘hierarchy’ contained in the general Waste Framework Directive (WFD)²⁸ establishes that preventing and reducing the amount of waste should actually be the main objective, followed by the recovery of waste by means of recycling, re-use or reclamation or any other process to extract raw materials; the use of waste as a source of energy; and, finally, deposit as the last resort.²⁹ Landfilling, which is the least preferable option and should be limited to the absolute minimum, is governed by specific rules.³⁰ Stringent technical requirements aim to minimize the negative environmental effects of waste landfilling. A general and quite comprehensive EU regulation implements the 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal,³¹ the primary objective of which is to limit pollution caused by uncontrolled trade and unchecked disposal of hazardous wastes, particularly in developing countries. Together, these rules form the basis of the ‘horizontal’ regulatory approach which lays down principles for the treatment of waste and inspires and frames national waste policy and waste law.

Furthermore, EU waste law comprises ‘vertical’ directives regulating specific waste streams: packaging and packaging waste,³² end-of-life vehicles,³³ electric and electronic equipment (EEE)³⁴ and batteries.³⁵ These instruments contain rules specifically aimed at reducing or prohibiting the use of some hazardous substances, while setting targets on collection and recycling activities.

A common feature of these systems, which is also found in the WFD, is the extended responsibility of producers, who are broadly defined as ‘any

²⁸ Directive 2008/98/EC of 19 November 2008 on waste OJ L 312, 22 November 2008, p. 3 (hereafter WFD).

²⁹ Article 4 WFD.

³⁰ Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste, OJ L 182, 16.7.1999, p. 1.

³¹ In the EU, the Basel Convention is implemented through the comprehensive Regulation (EC) 1013/2006 of 14 June 2006 on shipments of waste, OJ L 190, 12.7.2006, p. 1.

³² Directive 94/62/EC of 20 December 1994 on packaging and packaging waste, OJ L 365, 31 December 1994, p. 10, and later amendments.

³³ Directive 2000/53/EC of 18 September 2000 on end-of-life vehicles, OJ L 269, 21 October 2000, p. 34.

³⁴ Directive 2012/19/EU of 4 July 2012 on waste electrical and electronic equipment (WEEE), OJ L 197, 24.7.2012, p. 38, and Directive 2011/65/EU of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment, OJ L 174, 1.7.2011, p. 88 (RoHS Directive).

³⁵ Directive 2006/66/EC of 6 September 2006 on batteries and accumulators and waste batteries and accumulators, OJ L 266, 26.9.2006, p. 1.

natural or legal person who professionally develops, manufactures, processes, treats, sells or imports products.’³⁶ This extension of responsibility, right to the end of the product’s life, is meant in particular to encourage and facilitate the responsible treatment of products as waste, including the obligation to ‘take back’ products at the end of their lives under certain conditions, for recycling or re-use to the extent possible.

1.2.3 *Limiting the Consumption of Natural Resources*

Another main objective of product regulation is to limit excessive consumption and exploitation of natural resources. This is often linked to the wider objective of sustainable development. ‘Sustainable product policy’ has long been a key word in Europe, the idea being to stimulate production and use of products that consume the least possible amount of natural resources in production and/or use. This is a complex and, in many ways, controversial field. It is where we get into the difficult issues of life cycle assessments and of the idea of ‘ecological footprint’.

Energy efficiency is an important subject in this respect. For energy-using products, the 2009 Ecodesign Directive sets forth ecodesign requirements for energy-using products.³⁷ Its purpose is to stimulate production and consumption of products that use less energy. This is particularly relevant in relation to climate change insofar as electricity is produced by the burning of fossil fuels.

As mentioned, some laws have recently been passed to regulate *product durability/lifetime*.³⁸ The EU has set mandatory requirements on vacuum cleaners and lighting products, but EU Member States have themselves taken innovative legal initiatives to incentivize manufacturers. Examples include the French laws adopted to criminalize planned obsolescence and provide incentives to manufacturers to keep up the supply spare parts. Several EU Member States have also chosen to extend the time limit of mandatory consumer guarantees in their consumer laws.

Efforts to reduce the use and/or consumption of a product with adverse environmental effects by economic instruments, such as various taxes and charges on the product or its use, are also part of the picture. The setting of taxes and charges is primarily left to the Member States themselves,³⁹

³⁶ Article 8 WFD.

³⁷ The Ecodesign Directive is discussed in more detail in Chapters 8 and 9 of this volume.

³⁸ Maitre-Ekern and Dalhammar, ‘Regulating Planned Obsolescence’.

³⁹ It is very difficult in practice to implement EU-wide taxes.

and lately, some EU Member States have proposed legislation to reduce the demand for new products by lowering VAT on repair services, for example.⁴⁰

1.3 Challenges with Regulating Products

1.3.1 *The Complex Interactions between Economic and Environmental Concerns*

There are today a wide number of relevant laws at international, regional and national levels, some pursuing more economic objectives, others environmental ones. Sometimes, however, the various objectives and laws can clash. It is therefore important to discuss how a reasonable balance between environmental and economic concerns can be struck, along with identifying the benefits and addressing the disadvantages of a greater degree of harmonization of environmental laws both at the international and European levels.⁴¹

At the international level, some regimes are harmonizing environmental standards in order to facilitate trade and encourage investment. The trade agreements administered by the World Trade Organization (WTO) also aim to provide wider harmonization of national rules and practices, although they have often led to debates and controversies regarding the autonomy of states to set their own rules regarding products. At the heart of these debates, we find the concept of ‘processing and production methods’ (PPMs). A PPM rule or standard sets criteria relating to production methods – *how* a product is produced – not product characteristics. The PPM issue is central in environmental product policy. From the viewpoint of environmental/sustainability policy and consumer choice, ‘how a product is produced’ is crucial, because it concerns issues such as child labour, emissions and other effects of production and resource use during production and transport. But because PPMs are controversial and can create problems in relation to international trade law, many countries are

⁴⁰ One example is the recent Swedish inquiry into the Circular Economy, where a suggestion was made to cut VAT for businesses in the repair and leasing sectors: Swedish Ministry of Environment and Energy, *Från värdekedja till värdecykel – så får Sverige en mer cirkulär ekonomi* (from value chain to value cycle – How Sweden will get a more circular economy) (2017) Report SOU 2017:22.

⁴¹ This has been the subject of much debate and research; see e.g. J. Wiers, *Trade and Environment in the EC and the WTO* (Groningen: Europa Law Publishing, 2003).