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Options for lifetime labeling: design, scope and consumer interfaces

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Abstract
In the context of the Circular Economy, there is a lot of discussion on how policies at European Union and member state levels could provide incentives for the design of more durable products. One potential policy approach is to mandate manufacturers to provide lifetime information to consumers at the time of purchase. This could be done through a specific labeling scheme, or by including such information in the mandatory energy labeling scheme. However, the concept of lifetime is far from straightforward, and it is crucial to analyze the type of product and user patterns if such labeling is to be adopted. In this paper we outline some of the policy options and the issues that must be taken into consideration.

Introduction

In the last couple of years, there has been a lot of interest in Europe for promoting longer product lifetimes; and encouraging design for durability is one of the product policy issues stressed in the European Commission's Circular Economy Action Plan, which states (European Commission, 2015, p.4):

"The Commission will promote the reparability, upgradability, durability, and recyclability of products by developing product requirements relevant to the circular economy in its future work under the Ecodesign Directive"

Often, 'product lifetime' is used interchangeably with 'product durability', but in reality there may be differences between the concepts. For instance, a product may be durable but still discarded before it is worn down because the consumer looks for novelty or better functionality, or because the product – while still working – may have a worse performance over time (e.g. a lamp with lumen depreciation). While there is no legal definition of durability, the following definition has been proposed (Boulos et al., 2015, p.4):

"Durability is the ability of a product to perform its function at the anticipated performance level over a given period (number of cycles/uses/hours in use), under the expected conditions of use and under foreseeable actions. Performing the recommended regular servicing, maintenance, and replacement activities as specified by the manufacturer will help to ensure that a product achieves its intended lifetime"

This definition does not include repair, but the potential to repair products can be very beneficial from an environmental perspective and can also save money for consumers. 'Design for reparability', however, is a difficult concept to measure (Boulos et al., 2015) and reparability depends on other factors not related to product design, such as the availability of spare parts at reasonable cost.

The main policies for regulating the life cycle environmental impacts at the European Union (EU) and member state (MS) levels can be seen in table 1 below. There is a large potential to set mandatory standards for durability under the Ecodesign Directive and this has already been done for vacuum cleaners and lighting products. There is however great variance among different product categories regarding the suitability of setting durability eco-design requirements (Boulos et al., 2015; VHK, 2014).

As we can see in the table, policies to promote durability, lifetime and increased durability are found both at the EU and MS levels. EU has the main competence to set product design regulations, so MSs have mainly promoted durability in an 'indirect' way through strengthening consumer protection rules. France has also implemented a scheme for incentivizing the availability of repair parts, which is a way to support repairs. France has also criminalized planned obsolescence, which sends a signal to the market, though it is difficult to enforce this rule in practice.

Generally, the increasing number of initiatives indicates a lack of belief that markets alone will deliver more durable products without governmental interventions.

Potential for policies that provide consumer information on lifetime

While rules on consumer guarantees and burden of

Type of environmental aspect	European Union law and policy	Examples of member state (MS) policies
Chemical content	• Horizontal legislation (e.g. REACH) • Sector oriented laws (e.g. Packaging, electronics)	• Green public procurement criteria • Eco-labels
Collection and recycling of waste products	• General rules and guidelines (e.g. Waste Framework Directive) • Sector oriented laws (e.g. WEEE Directive; Waste and packaging waste Directive)	• Waste related taxes • Mandatory re-use obligations for white goods (Spain)
Energy efficiency	• Mandatory energy performance standards (MEPS) (set under the Ecodesign Directive) • Mandatory energy labeling (set under the Energy Labeling Directive) • Voluntary labeling (Energy Star)	• Eco-labels • Green public procurement criteria
Durability, lifetime, remanufacturing and reparability	*Direct incentives:* • Mandatory lifetime requirements set under the Ecodesign Directive for vacuum cleaners, lighting products *Indirect incentives:* • Minimum rules on consumer guarantees • Green Public Procurement poised to add availability of spare parts, reparability, minimum warrantees, and standard fittings to revised criteria	*Direct incentives:* • Banning planned obsolescence (France) *Indirect incentives:* • Incentivizing provision of spare parts (France) • National rules on long consumer guarantees and/or changed rules for burden of proof is transferred from seller to consumer (several MS) • Public procurement of remanufactured furniture and computers (Sweden) • Support to 2nd hand market (several MS)

Table 1. Environmental product policy instruments at the EU and member state levels (Source: Faure and Dalhammar, forthcoming).

proof for product failures may provide some incentives for 'design for durability' among manufacturers, another policy has been proposed recently: the provision of information to the consumer of the expected lifetime of a product at the time of purchase (ENDS Europe 2016; REEUSE, 2015). One potential way forward is to include durability information in the mandatory EU energy labelling scheme. In the EU Action Plan for a Circular Economy, the Commission also states that it will *'specifically consider . . . durability information in future Energy Labelling measures'* (European Commission 2015, p.8).

However, key questions relate to the scope of such a scheme for consumer information (i.e. which product groups should be included), how it should interact with other policies, whether it should be standalone information or provided through existing labeling schemes, and how the information may best be conveyed to consumers. There are indications that consumers have problems understanding some of the information provided in existing energy labeling schemes(ECOFYS, 2014; Waechter et al., 2015), and it is paramount that experiences from different labeling initiatives are considered when a lifetime labeling scheme is designed.

Another complication is that the concept of 'lifetime' is not straightforward. For example, when it comes to LEDs it is lumen depreciation over time, in addition to failure in operation, that is crucial; and for some lighting consumers colour depreciation over time may be important (Richter et al., 2017). Lifetimes for products like electronics, which can also be expressed in years, are also dependent on the intensity of use assumed. User patterns and the extent of B2B vs. B2C transactions will also vary between products groups, which means that the labeling must be product group specific.

Additional complications include what kind of information that should be provided in relation to durability. Apart from straightforward information about projected lifetime, labeling could touch upon other issues including:

- Availability of spare parts
- Extended warranties or free repairs for a set period
- Whether the product is compatible with other products
- Whether the product design is modular in order to allow the user to replace parts
- Reparability or ease of disassembly
- Whether the product is upgradeable
- Whether software updates influences the product performance, and how
- The weight of durability compared to environmental impacts from other product characteristics (e.g. energy efficiency).

For some product groups, it is common that manufacturers voluntarily indicate expected lifetime on the packaging, for instance light bulbs. However, it is not necessarily evident for the consumer exactly what the lifetime claims imply. A further problem is that a manufacturer can claim that a product has a long lifetime in relation to other products in its specific product category, but not necessarily in comparison with other competing product category. One example concerns claims from manufacturers of halogen light bulbs that the product is 'long life'. This may indeed be true when compared to other halogens, but not when compared to LED light bulbs which typically have a much longer lifetime than halogens. This implies that consumers may be misled in some cases.

Thus, providing lifetime information to consumers can be an important driver for designing durable products, but the complexities involved means that more research is needed to move forward and adopt relevant policies.

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References

Boulos, S et al. (2015). The Durability of Products: Standard Assessment for the Circular Economy under the Eco-Innovation Action Plan. European Commission, 2015.

ECOFYS et al. (2014). Evaluation of the Energy Labelling Directive and specific aspects of the Ecodesign Directive. Report to the European Commission.

ENDS Europe. (2016). UBA Calls for Product Resource Efficiency Policies. ENDS Europe Daily 17 February 2016.

European Commission. (2015). Communication of 2 December 2015 on Closing the Loop - An EU Action Plan for the Circular Economy, COM(2015) 614.

Faure, M. and C. Dalhammar. (forthcoming). A Law and Economics Perspective on Product Regulation. In Maitre-Ekern, C., C. Dalhammar and H.C. Bugge. (eds.). Preventing Environmental Damage from Products. An Analysis of the Policy and Regulatory Framework in Europe. Cambridge University Press.

RREUSE. (2015). Improving product reparability: policy options at the EU level.

Richter, J., Van Buskirk, R., Dalhammar, C., Bennich, P. (2017). Accounting for durability in least life cycle cost methods. ECEEE Summer Study Proceedings.

VHK. (2014). Resource efficiency requirements in Ecodesign: Review of practical and legal implications. Ministerie van Infrastructuur en Millieu. Retrieved from http://kunststofkringloop.nl/wp-content/uploads/2016/01/Ecodesign-Resource-Efficiency-FINAL-VHK-20141120.pdf

Waechter, S. et al. (2015). Desired and undesired effects of energy labels – an eye-tracking study. PLoS ONE 10(7), 1-26.