

Right to repair

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Executive Summary

In the course of the 'Green Deal' proclaimed by European Commission President von der Leyen, European consumer law is to be geared towards sustainability. The regulatory efforts of the European Commission focus on the repairability of products and the so-called 'right to repair'. Such a right must simultaneously take into account people's behaviour, economic efficiency and the environment, i.e. people's willingness and ability to buy sustainable products, to use them sustainably and, if necessary, to repair them, as long as this is ecologically feasible. However, the 'right to repair' must also specify how the requirements for the use of resources and their reuse and recycling can be interlocked with consumer law, depending on the product, which relies on the individual who stands up for his or her rights and fights for them if necessary.

With a view to these requirements, we will first outline the basic theoretical and economic backgrounds of consumer behaviour that tend to stand in the way of sustainable consumption and production in the current situation. Based on this, we present the results of an empirical study in which we focus on the repairability of digitally networked products [also referred to as digital connected products]. The results of the study illustrate that there is still considerable unrealised potential in Germany (and not only there) in terms of raising consumer awareness and empowering consumers to repair their devices. In the product group of digitally networked products that we focus on, there is no pronounced 'repair culture' in Germany. Accordingly, the repairability of a device is obviously not a major factor in the purchase. The willingness to forego useful time or certain qualities is also rather low. Many people seem to fundamentally lack awareness of this important facet of sustainable consumption. In addition, there is obviously still a great need for improvement with regard to the available opportunities to conduct a repair.

At the same time, the vast majority of interviewed respondents express their desire for measures to increase the repair rate. The instruments of "repair labels" and "repair certificates" are of particular importance in the context of "consumer information" and the free provision of replacement appliances. The vast majority of respondents (64%) consider a repair label containing summary information on whether and how well an appliance can be repaired to be important or even very important. While this aspect should probably be addressed by suitable government measures, the provision of replacement appliances could also be implemented by suitable private-sector measures or corresponding business models, which could be promoted by the government if necessary.

Based on this and the in-depth legal analysis, we make the following five recommendations in this policy brief:

1. RECOMMENDATION Holistic perspective

A central element is the interweaving of public environmental law (especially the Ecodesign Directive) with private consumer law. In order to make the ecodesign requirements effective through private law, compliance with ecodesign rules should give rise to a presumption of proper quality, similar to the model of the Product Safety Directive. A feasible way to dovetail public and private law enforcement is to strengthen the position of consumer protection organisations: Following the English model, a super-complaint procedure could be introduced, which would enable consumer protection organisations to press for compliance with action plans and to have an obligation to take legal action.

2. RECOMMENDATION

Preserve room for manoeuvre for Member States

In the course of its directive reforms, the European Commission strives for (further) full harmonisation. In view of the uncertainties as to whether and how the goals of sustainable product use can be realised with the existing legal instruments, we believe that a one-size-fits-all approach should be rejected. Instead, opening clauses for "regulatory sandboxes" should be provided to allow national leeway, especially in those sectors where consumers are confronted with system transactions (such as in the ICT sector).

3. RECOMMENDATION

Codesign-friendly reform of the Sale of Goods Directive & anchoring of direct claims against manufacturers

In addition to aligning the concept of defects in the Sale of Goods Directive with the Ecodesign Directive, the limitation periods should be orientated to existing codesign rules for specific product groups. This should be accompanied by an extension of the reversal of the burden of proof. The codesign requirements on the prescribed period for software updates should be used to fill out the contractual obligation to provide updates. In addition, the European Commission should, in accordance with its announcement, consider the possibility of (direct) manufacturer liability. A similar approach was adopted by the German Federal Government, as agreed in the coalition agreement of the current government. The European Commission should consider both the possibility of an action directe based on the French model and the possibility of a newly designed manufacturer's obligation and/or commercial guarantee to repair.

4. RECOMMENDATION

Additions to the Ecodesign Directive and "blind spots"

With the introduction of resource efficiency requirements for some product groups as of 1 March 2021, a first important step was taken towards the expansion of the codesign approach announced in the Circular Economy Action Plan. In order for the intended Ecodesign Regulation to achieve full effect, greater consideration should be given to consumer interests: As far as possible and safe, there should also be an obligation to supply spare parts to end users and not only to professional repairers, in order to promote technically sensible do-it-yourself repairs. In addition, it should be examined whether a limitation of spare parts prices, e.g. to a 'reasonable' level, is economically meaningful and legally feasible. A reasonableness assessment could be based on the costs of the companies and the corresponding returns. In addition to financial and infrastructural support from the European Commission, use should be made of the possibility of horizontal regulations for product groups provided for in the Ecodesign Regulation, to the greatest reasonable extent.

5. RECOMMENDATION

Consumer information and awareness raising

The empirical survey showed that a large part of the German consumer community still lacks the awareness and skills necessary for the development of a repair culture. Against this background, duly ambitious (consumer) policy goals, strategies and measures should be defined and backed up with appropriate resources. This also includes whether, in what form and by whom a label for the reparability of products should be developed and awarded.

Keywords

GREEN DEAL / RIGHT TO REPAIR / CONSUMER INFORMATION / ECODSIGN-DIRECTIVE / GOODS PURCHASE GUIDELINE / SUSTAINABLE PRODUCTION / SUSTAINABLE CONSUMPTION

Table of contents

Introduction into the problem	6
Right to repair	10
1. Consumer science, business and economic backgrounds	11
1.1 The consumer's perspective: Why do reasonable people throw away products that are "still good"?	
The Theory of Consumption Values	11
1.2 The perspective of companies: Planned obsolescence or economic consequence?	13
1.2.1 The "time" factor: The acceleration trap	13
1.2.2 The "system" factor: From product business to system business	14
1.3 The market will not fix it	15
2. Results of an empirical survey on the topic of the right to repair	16
2.1 Study design and methodological principles	16
2.2 Results	18
2.2.1 Descriptive results	18
2.2.2 Socio-demographic differences between respondents	24
2.3 Conclusion	26
3. International and supranational regulations	27
3.1 USA	27
3.2 EU Member States	28
3.2.1 Repair index (France)	28
3.2.2 VAT Directive 2006/112/EC	29
3.2.3 Repair bonuses	29
3.3 Proposals of the European Commission	29
3.3.1 Extension of the Ecodesign Directive	30
3.3.2 Amendment of the Sale of Goods Directive	31
3.3.3 Amendment of Directives 2005/29/EC and 2011/83/EU	32
4. Legal approaches to repairability	34
4.1 Administrative enforcement (Ecodesign Directive)	34
4.1.1 Regulatory level	34
4.1.2 Enforcement level: Market surveillance	42
4.2 Individual enforcement (civil law)	43
4.2.1 Warranty for defects under the law of sale	44
4.2.2 Manufacturer's liability	52
5. Recommendations for action	54
Bibliography	57
Appendix	60

A

**Introduction
into the problem**

The discussion about linking sustainability and consumer protection has been simmering for decades. Now, unsurprisingly, the European Commission has once again taken the initiative. In the course of the “Green Deal” proclaimed by European Commission President von der Leyen, European consumer law is to be orientated towards sustainability. This has been lacking so far. Despite a comprehensive revision of European consumer law in the years 2010 – 2019, sustainability has been remained virtually absent. Just for reference: The United Nations Sustainable Development Goals were adopted in 2015, UN sustainability conferences were held every 10 years since 1992, the Marrakesh Process (*10-Year Framework of Programmes on Sustainable Consumption and Production Patterns*) for sustainable consumption and production patterns was initiated at the Johannesburg Summit (WSSD) in 2002 and adopted at the World Summit in Rio de Janeiro in 2012 – an orientation towards sustainability would therefore have made sense at an early stage. The Green Deal specifies goals that require the active involvement of society – and thus not least of consumers.¹

The EU, on the other hand, was primarily concerned in the last round of reforms, the so-called Consumer REFIT, with converting the entire consumer law from minimum to maximum harmonisation and taking into account the digitalisation of the economy and society. The Green Deal, the Circular Economy Action Plan and the Supply Chain Act address consumer-relevant aspects such as durability, reduction of planned obsolescence, repairability, reusability/recyclability, energy and material efficiency, social and ecological aspects of supply chains, sharing/exchange/renting (sharing economy). These criteria influence consumer behaviour. Sustainability and the circular economy are not possible without innovative and supportive consumer legislation.²

The regulatory efforts of the European Commission focus on the repairability of products as well as on the so-called “right to repair”. Given the scale of the initiative, such a goal may appear rather modest. But appearances are deceptive. A longer lifespan of products could lead to a considerable reduction in resource- and thus energy consumption (cf. Figures 1 and 2 and the reports of the International Resource Panel). The focus on repairability and lifespan of products could change the behaviour of consumers in the medium term. Even more important is the shift in perspective: anyone who seriously considers the repairability of products must think about the origin of the products, consumption of resources and the associated raw materials as well as their procurement, the energy required and the reuse of the recycled raw materials, to name but a few. This brings the entire value chain into focus.³ Only by addressing such a comprehensive directive, repair can have a beneficial effect in terms of sustainability and circular economy approaches. Thus, the consumer perspective is intertwined with the raw material extraction and use, with economic and energy strategy perspectives and finally, with the current geopolitical situation, the growing world population and a constantly increasing demand for raw material and for products.

A “right to repair”, if it is to be meaningfully designed, must simultaneously take into account people’s behaviour, economic efficiency and the environment, as well as people’s willingness and ability to buy sustainable products, to use them sustainably and, if necessary, to repair them, as long as this makes ecological sense. However, such a right must also specify how the requirements for the use of resources and their re-use can be interlocked with consumer rights, depending on the product, which rely on individuals standing up for their rights and fighting for them.

1 https://eur-lex.europa.eu/resource.html?uri=cellar:b828d165-1c22-11ea-8c1f-01aa75ed71a1.0021.02/DOC_1&format=PDF

2 Cf. Also the publication of the SVRV: Micklitz et al. 2021 – Widersprüche zwischen Verbraucher- und Umweltrecht.

3 Cf. Micklitz et al. 2021.

Perspective of the UN International Resource Panel⁴

The UN International Resource Panel points out that a reversal of climate change cannot succeed without a resource turnaround that would increase the intensity of use of existing products. This means an increase in longevity and thus also recycling and reuse of functional components, repair and the recycling models of a sharing economy. Above all, however, what is needed is sustainable product design, based on material and energy efficiency and thus saving raw materials throughout the value chain and on a large scale. Such a sustainability-orientated economic model secures raw material poor countries such as Germany with climate-intelligent innovations and solutions. This

cannot be achieved without a social equilibrium between environmental and consumer justice. The following graphs for the consumer aspect of housing show that these solutions not only have high economic and socio-ecological relevance for Europe, but that such product and service innovations should also be available for the dynamically growing countries in Asia, for example. The data of the UN's International Resource Panel (IRP) illustrate this (cf. the following figures):

Strategies to increase material efficiency through recycling can significantly reduce greenhouse gas emissions worldwide (e.g. in housing) (IRP 2020a, b).

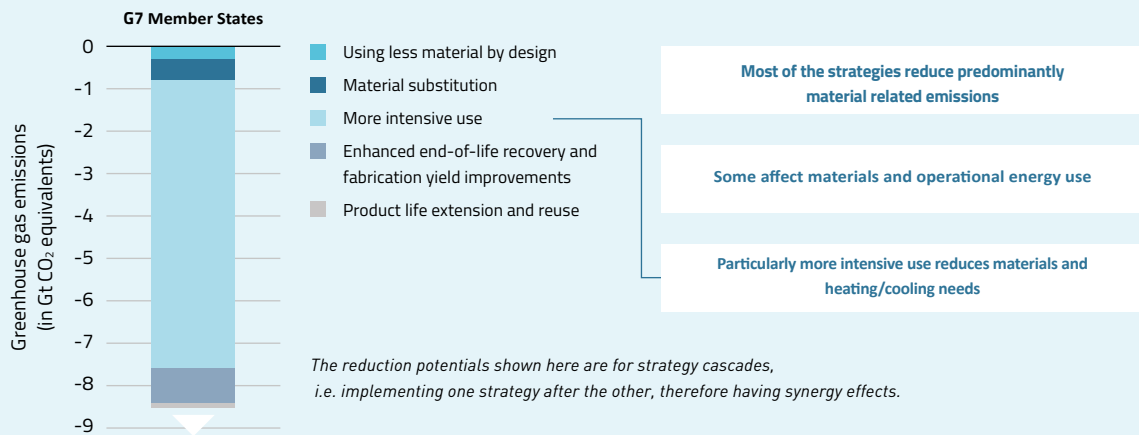


Figure 1: Potential greenhouse gas savings through different material efficiency strategies using the example of residential buildings in G7 Member States, cumulative 2016-2060

This figure shows cumulative savings from 2016 to 2060 in comparison with the reference scenario, adapted from IRP RECC 2020 (Own illustration based on IRP (2020a)).

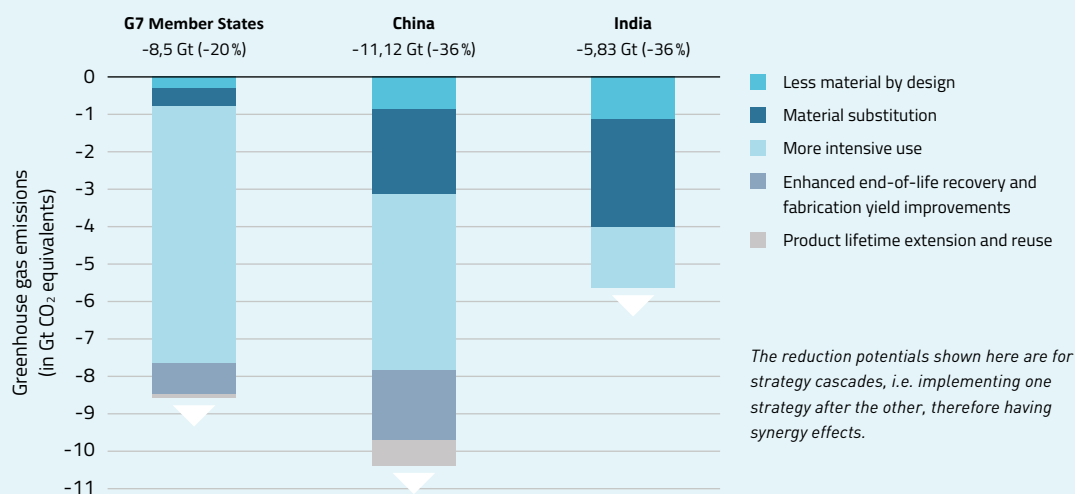


Figure 2: Potential greenhouse gas savings from different material efficiency strategies using the example of residential buildings, cumulative 2016-2060 – results for G7 Member States, China and India.

This figure shows cumulative savings from 2016 to 2060 compared to the Reference Scenario, adapted from IRP RECC 2020. (Own illustration based on IRP (2020b, p. 19)).

⁴ Cf. reports at <https://www.resourcepanel.org/reports/resource-efficiency-and-climate-change>, access to the documents indicated in the box: 10.09.2022

What sounds so harmless – the “right to repair” – raises complicated questions of coordination between public law requirements for product design/use and the private law possibilities of individual and collective enforcement of such a right.

In order to make the dimensions tangible and understandable, this policy brief focuses on two product groups that are currently receiving the most of general attention: mobile phones and tablets.⁵ However, whatever noble goals can (and should) be achieved through and with the help of the law will ultimately depend on whether it is possible to redirect consumption, from a fast and ever-increasing pace of the product cycle, to a longer and slower use and consumption of products and towards new practices of sharing, exchanging and renting that leave the products in the ownership of the providers. This requires people who go along with the process, can develop their competences accordingly and change their behaviour.⁶ The transition from a mass disposal economy to a circular economy can only be achieved by rethinking the use and consumption phase (e.g. the interplay between maintenance and repair, between repair and partial disposal or recycling). This goal connects the consumer community with the activities of trade, crafts, service providers and/or manufacturers in complex legal spaces.

Against this background, this policy brief is divided into **three steps**: The **first** deals with people’s behaviour with the reasons that motivate them to buy products. In addition, some empirical data on the attitudes of the population towards some selected aspects of the “right to repair” are presented. Only against this background can the legal rules be unfolded that are to be included in a holistic perspective.

As to the **second step**: The prerogative to act for the concretisation of the legal framework lies with the European Commission. Two regulations are in the foreground: the ongoing revision of the Ecodesign Directive and the planned revision of Sale of Goods Directive, specifically the upgrading of the right to repair. It will become apparent that both sets of rules have so far stood side by side without any connection, which is nowhere clearer than in the enforcement of the law. The ecodesign rules are supposed to be enforced by market surveillance authorities, the right to repair by the consumers, in concreto by the individual person fighting for his or her right. This policy brief will reveal the structural deficits that are evident both at the substantive level, in the lack of interconnection between public and private law and in the enforcement of the law. In the **third step**, this policy brief will strive to spark a discussion with its recommendations arguing for out-of-the-box thinking and to pave the way for proposals on what a “right to repair” could look like, adding further decisive nuances to the existing rules in a minimalist and concrete way, and pointing out new ways that, if not resolve the tension between sustainability and consumer protection, at least minimise it.

5 As the publication of two draft regulations of the European Commission on the design of mobile phones and tablets with a catalogue of ecodesign measures took place after the editorial deadline for this publication, they cannot yet be addressed in the context of this Policy Brief; see on the drafts https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12798-Energy-labelling-of-mobile-phones-and-tablets-informing-consumers-about-environmental-impact_en and https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12797-designing-mobile-phones-and-tablets-to-be-sustainable-ecodesign_en, as well as for an initial assessment by the authors the Addendum in Appendix 2.

6 Cf. SVRV (2021): Gutachten zur Lage der Verbraucherinnen und Verbraucher, p. 225ff.

B

Right to repair

1. Consumer science, business and economic backgrounds

1.1 The consumer's perspective: Why do reasonable people throw away products that are "still good"? The Theory of Consumption Values

In consumer science literature, there is a multitude of theories that aim to explain individual, collective and organisational purchasing, consumption, communication and use behaviour. Nevertheless, there are some theories which have proven to be particularly effective and efficient. The criterion here is in particular the extent to which the respective theories are able to explain the observable differences in purchasing, consumption, communication and usage.

With regard to purchasing and consumption behaviour, which is the initial focus here, early yet still popular economic theories focus on the benefits that customers can achieve through the purchase or use of a certain product or service. In that view, people always buy a product or service when its possession, ownership or use is useful to them.

However, this approach seems too superficial for the theoretical foundation sought here, especially because the concept of utility is too undifferentiated and not very operational. In addition, numerous studies show that the explained variance that can be achieved even with further differentiation lags far behind that of modern theories on purchasing, consumption, communication and usage. An example of this is the technology acceptance

model, which is still popular in the field of technology acceptance research (cf. Davis et al. 1989; Venkatesh and Davis 2000). This model explains the intention to use a certain technology or a certain technical device, e.g. a smartphone or a tablet, with two variables: the "perceived usefulness" and the "ease of use". The explained variance achieved with these variables is 74% with regard to the intention and 52% with regard to the actual use of a technology (Venkatesh et al. 2012).

A modern theory that regularly achieves a higher level of explained variance is the *theory of consumptive values* (cf. Sheth et al. 1991) which uses the value that the customer attaches to the product or service to explain buying and consumption behaviour. This value can be understood as the linear combination of different partial values and is therefore conceived in a multidimensional way. Specifically, the following five dimensions are distinguished (cf. Fig. 3): the Functional Value, the Social Value, the Emotional Value, the Epistemic Value and the Conditional Value. These will be briefly outlined below.

Functional Value is defined as "the perceived utility acquired from an alternative's capacity for functional, utilitarian, or physical performance. An alternative acquires functional value through the possession of salient functional, utilitarian, or physical attributes. Functional value is measured on a profile of choice attributes"⁷.

In traditional models, it is assumed that functional value is the main driver of a consumer decision. This applies in particular to models that attempt to attribute observable purchasing behaviour to a more or less "rational" weighing process.

7 Sheth et al. 1991, p. 161.

In the context of the digitally networked products to be focused on here, the functional value can vary depending on which function the respective product is supposed to fulfil. A digitally networked product (e.g. a smartphone) can fulfil several functions (e.g. make a phone call, tell the time, take a photo). In this case, one can also speak of a *bundle of benefits or functions*. The promise of functional value must be self-realising in the consumption phase and be both simple and demonstratively accessible. The digitally networked product must then, for example, provide access that is as barrier-free as possible to social networking and interaction. Interruptions and malfunctions may lead to discarding the device or passing it on.

The second dimension, social value, describes the perceived value from the recognition by one or more specific social groups that a customer receives through the purchase or use of a product or service (Asche 2017; Sweeney/Soutar 2001).⁸

Social value is particularly significant for the purchase decision if the respective product fulfils a demonstration function (e.g. with regard to a certain social status expressed by an obvious brand).

In the case of digitally networked products, this value can be significant if the product is used in social contexts or in public. However, this also means that the value of a product no longer depends only on the individual user, but on social and thus contextual factors. If these change (e.g. because the brand image changes), this can lead to a "social" devaluation of the product, which precludes further use of the product, even though its functional value may not have changed. Products that lose their social value can thus be replaced, although the functional value is still given. This connection explains, among other things, why technical products can also be subject to certain fashions.

The third dimension, *Emotional Value*, is defined as "perceived utility acquired from an alternative's capacity to arouse feelings or affective states"⁹ (Sheth et al. 1991, p. 161) and addresses the hedonic value of a product or service (Pura 2005). Emotional value includes feelings such as joy, fear, enthusiasm or anger (Holbrook/Hirschman 1982).

With regard to the digitally networked products to be focused on here, this value can be influenced by many different factors. One aspect could be the aesthetic

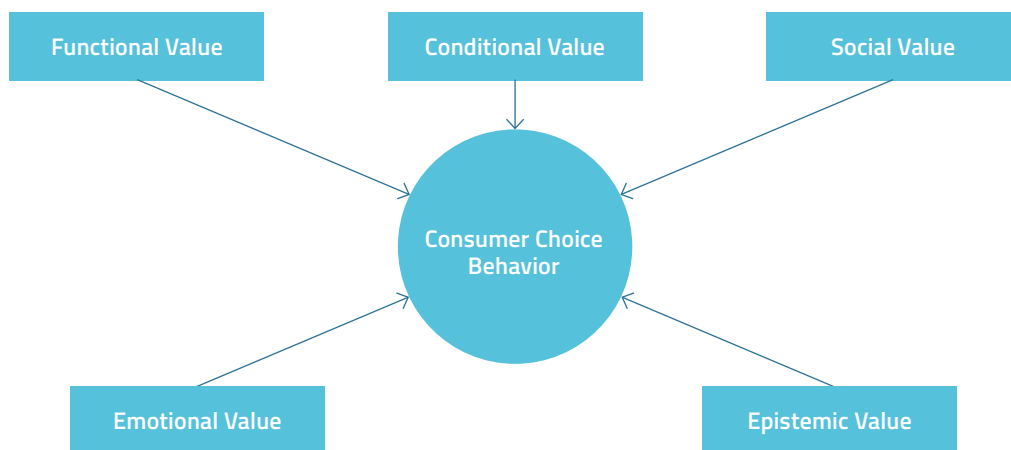


Figure 3: Dimensions of Consumption Value

(cf. Sheth et al. 1991, p. 160)

8 "The social value of an alternative is defined as: The perceived utility acquired from an alternative's association with one or more specific social groups. An alternative acquires social value through association with positively or negatively stereotyped demographic, socioeconomic, and cultural-ethnic groups. Social value is measured on a profile of choice imagery." Sheth et al. 1991, p. 162.

9 "Emotional Value. The emotional value of an alternative is defined as: The perceived utility acquired from an alternative's capacity to arouse feelings or affective states. An alternative acquires emotional value when associated with specific feelings or when precipitating or perpetuating those feelings. Emotional value is measured on a profile of feelings associated with the alternative." Sheth et al. 1991, p. 162.

properties of a product (e.g. the chosen design language). But moral aspects that give the customer a “good feeling” can also come into play here (cf. e.g. Stehr 2007). If the emotional value of a particular digitally networked product is particularly important to a customer, this can lead to an unnecessary substitute decision from a functional point of view; precisely because the product is no longer “beautiful”.

Conditional value (situational or perceived conditional value) is defined as “perceived utility acquired by an alternative as the result of the specific situation or set of circumstances facing the choice maker” (Sheth et al. 1991, p. 162). Accordingly, conditional value depends on the context and only exists in a specific situation (Asche 2017; Holbrook 1996).

With regard to the digitally networked products to be focused on here, this value can vary depending on the situation. For example, the possibility of being able to make an emergency call with a smart phone in rural areas considerably increases the value of the corresponding device for certain consumers, regardless of other functions (e.g. camera).

Finally, *Epistemic Value* is that a product or service arouses the customer’s desire for novelty, offers something new and/or fulfils the desire for knowledge (Sheth et al. 1991).¹⁰ In the context of this study, it can be assumed that digital networked devices such as smartphones enable customers to do their shopping in a new way. Consequently, customers will perceive an epistemic value in the context of using these devices or bundles of benefits. Previous studies have shown that epistemic value has a strong influence on purchasing behaviour (Sheth et al. 1991). With regard to the question in focus, a digitally networked product can therefore lose value for customers if it is no longer “new” or has “nothing new” to offer anymore.

All in all, there is a rather complex interaction of the various values for purchasing and consumption behaviour, whose respective behavioural relevance depends on the respective product or service, as well as on the individual situation and the socio-cultural

lifestyle context. Changes in consumption and use behaviour can therefore arise through the perception and appreciation or the change in the importance of these “values” as well as their further shaping in co-design. Constructing and reconstructing the associated patterns of interpretation and action – a redesign of the production-consumption system – can also only take place in the interplay between producers/providers and their premises for action (cf. chapter 2.), consumers and legislation (legal framework), i.e. politics (cf. chapter III).

1.2 The perspective of companies: Planned obsolescence or economic consequence?

1.2.1 The “time” factor: The acceleration trap

An essential goal of market-orientated corporate management is to contribute to the achievement of operational goals by satisfying customer needs on a permanent basis (cf. Meffert et al. 2019). The marketing addressed here regularly focuses on market-related target variables such as an increase in market share, e.g. through an increase in sales achieved with a product or service. These are in turn influenced by two factors, namely the price of the given product (p) and the quantity sold (x).

If a company wants to take measures to increase the turnover achieved with a product or service, it has three options at its disposal: it may either i) increase the quantity sold, e.g. by opening up new sales markets and new customer groups, ii) succeed in pushing through higher prices in the market, or iii) apply a combination of the two possibilities mentioned above.

When analysing these three possibilities, many companies are faced with the problem that an increase in the

¹⁰ “Epistemic Value. The epistemic value of an alternative is defined as: The perceived utility acquired from an alternative’s capacity to arouse curiosity, provide novelty, and/or satisfy a desire for knowledge. An alternative acquires epistemic value by questionnaire items referring to curiosity, novelty, and knowledge.” (Sheth et al. 1991, p. 162).

quantity sold is often not possible in view of the high degree of saturation that characterises many markets, or can only be achieved through price reductions. Since this measure can not only be detrimental to the actual goal of increasing turnover, but in many cases can also lead to negative competitive reactions, it seems more advantageous to increase turnover by achieving higher prices in the market for the same sales volume.

In oligopolistic or polypolistic markets, however, such a price increase is only possible if the company manages to achieve a perceptible differentiation of its own products or services orientated towards the preferences of the demanders. Here, too, the company has several possibilities at its disposal. One opportunity for differentiation is to reduce comparability through a high number of market innovations. In this respect, companies in saturated markets have a strong incentive to innovate even if the existing products and services still have a high functional or utility value. They can distinguish themselves from the competition through innovation and thus use temporary (partial) monopolistic leeway to increase turnover and market share by raising prices. In view of the theory of consumption values just described, this also applies if the corresponding products do not offer an increased functional benefit in the narrower sense. In certain situations, a product can be attractive because it is “new” and the members of the peer group know this.

Up to this point, it can be shown that companies in saturated markets have an effective incentive to differentiate themselves from the competition through ever shorter product life cycles. It should be noted, however, that if several companies make use of these differentiation opportunities, a situation can arise that is referred to in the economic literature as the “acceleration trap” (*“Beschleunigungsfalle”* see, among others, Backhaus and Bonus, 1988). The characteristic of this state is that companies can lose sight of the customers’ perception of innovation if their own innovation activities are too strongly orientated towards competition. In extreme cases, this can lead to customers no longer perceiving an innovative product as such. Then, the differentiation that is actually strived for does not succeed. At the same time, however, it is no longer possible to curb innovation activity, as otherwise one is no longer competitive.

1.2.2 The “system” factor: From product business to system business

The time factor plays a role in another development relevant to business administration, which is important in connection with the focus on the reasons for an accelerating consumption of resources, which ironically runs counter to the economic principle of using scarce resources as sparingly as possible. This development is that in certain contexts it can make sense for some

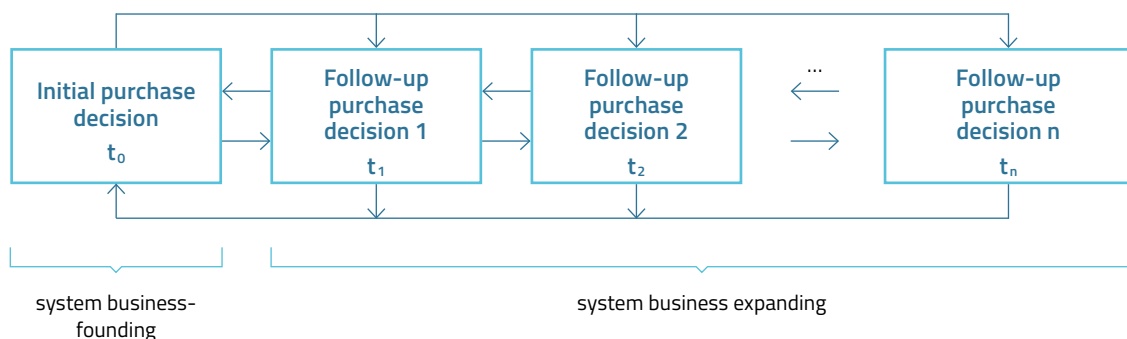


Figure 4: Basic concept of a system business

Source: Weiber (1997), p. 297

companies to establish a business model or pursue a type of business that is referred to as “*system business*”. In system business, products are marketed that are designed for the anonymous market, but there is a temporal purchasing association that may be perceived by customers and may already influence the initial procurement decision and marketing activity of the supplier.

Figure 4 outlines the structure of this type of business in a simplified form. IT technologies and systems and the digitally networked products marketed within them are an almost ideal example of such a system business. The decision in t_0 that gives rise to the system business is often to buy a certain device (e.g. an iPhone). However, in order for this device to develop its maximum benefit over time or to maintain the level of benefit already achieved, subsequent purchase decisions are necessary (e.g. adapters or specific charging cables), which are already consciously or unconsciously determined with the initial purchase decision.

For the question to be dealt with here, it is important, *inter alia*, whether it is a closed or an open system, i.e. whether the corresponding technology allows the integration of technologies from complementary or competing suppliers or not. Because whenever it is a closed system, the customer runs the risk that in the event of the obsolescence of a system element, the entire system becomes dysfunctional (and thus all other system elements are also disposed of, even though they would still be functional in themselves). With regard to the right to repair, closed systems seem to be particularly problematic when certain system elements can no longer be replaced or when this is only possible at prohibitively high costs. In this case, all other products or service components woven into the system lose their usefulness or value.

1.3 The market will not fix it

The previous explanations should make it clear that under certain conditions it makes sense and is desirable, and sometimes even necessary, for both consumers and the companies offering them to dispose of digitally networked products regardless of their functional benefit or to replace them with (quasi-) innovative products. In this respect, it is not necessarily to be expected that products that have the most durable functional benefit will prevail through market processes that are controlled by the customers. On the contrary, it seems possible that the indicated processes (development of system businesses and shifting of the importance of different types of value) will continue in the future. A break in these processes would only be expected if customers were to become more aware of sustainable, i.e. long-term product use and/or if differentiation were no longer worthwhile for companies due to ever shorter innovation cycles and/or if companies were to abandon the use of closed systems. Nevertheless, it should be noted that the customer's freedom of choice may well be restricted in the systems business outlined. It may be that the customer would like to continue using a certain product, but for systemic reasons this is no longer possible without some inconvenience.

In this respect, the connecting and prerequisite element is sustainable design, i.e. the design of the underlying product-service system including the creation of the underlying business model, since both the individual and cultural-contextual factors of purchasing and consumption behaviour (be it the above-mentioned “values”) as well as the interacting “system transactions” (be they open or closed) are (can be) included in the design. However, up to now there has been a lack of active use of these listed bodies of knowledge in the shaping of sustainable consumption by consumer policy. Sustainability awareness in politics, economy and among consumers, appropriate design guidelines, sustainability-relevant and comprehensible product and service information as well as design and action competence (sustainability and digital literacy, cf. SVRV 2021) are decisive conditions for this.

2. Results of an empirical survey on the topic of the right to repair

After having presented some theoretical basics that would have to be taken into account when designing a right to repair, the next question is what attitudes and opinions the population has towards a corresponding (consumer) policy initiative. Already in its expert report on the situation of consumers, the SVRV has pointed out that sustainable consumption is only possible through the interaction of three factors: awareness, competence and opportunity. "Awareness" means that consumers are aware of the possible problematic consequences of their consumption behaviour. Furthermore, "competence" refers to the ability to develop measures and strategies to change this potentially problematic behaviour. Then, the "opportunity" factor takes into account the fact that consumer behaviour is often conditioned infrastructurally or normatively. In other words, if people do not find sustainable offers, they cannot consume sustainably even if they consider it desirable and can make competent decisions. Together, the three factors can be used to measure "sustainability literacy".

This differentiated and viable analytical framework can be transferred to the underlying problem here. In order for consumers to decide in favour of repairs, they should, first of all, be aware of the sustainability character of repairs. At the same time, they should be able to carry out repairs themselves or to initiate their professional implementation (= competence). However, *repair awareness* and *repair competence* only lead to corresponding behaviour if *opportunity* to repair is also given.

If, for example, there are too few places where an appliance can be repaired, or if there is a lack of important components for the repair, this is an obstacle to the repair plans of conscious and competent consumers. As in the case of "sustainability literacy", the three factors mentioned here can be used to measure "repair literacy".

2.1 Study design and methodological principles

In order to gain a first, fundamental insight into the current awareness, the own competence and opportunity assessment of consumers in Germany in the field of repairs as a facet of sustainable consumption, a population-representative study was designed by the SVRV. This study also included a survey on the importance of certain measures to increase the repair rate. The corresponding data were acquired with the help of the Institut fuer Verbraucherwissenschaften, Duesseldorf, from the COMPASS online panel survey conducted by Infratest dimap.

The COMPASS survey was conducted in the period from 7 to 19 July 2022. The basis for this online survey is a random selection of members of the Payback customer loyalty programme, which has around 25 million members. Compared to many other access panels that are held online and self-recruiting for market research surveys, the "Payback Panel" is characterised by offline recruitment, i.e. through an in-writing approach to randomly selected Payback members.

The data collected was weighted in such a way that it is representative of eligible voters living in Germany with online access. The weighting is based on figures from the microcensus of the Federal Statistical Office (Germans aged 18 and over) and the D21 Digital Index on online use, as well as on Infratest dimap's own calculations. The variables of age, gender, education, household size and region (federal state and municipality sizes / BIK10) were used for weighting.

The survey consisted of closed questions with predefined answer options as well as open questions. The questionnaire for the study can be found in the appendix. It was explicitly geared towards the repair of digitally networked devices and opened with the following address:

"The following are some questions on the repair of digitally networked devices. These include, for example, smartphones, tablets, smart watches or smart TVs. When you think about the repair of such devices, for example smartphones, tablets, smart watches or smart TVs, how much do you agree with the following statements?"

The statements (indicators) B-1 to B-6 were used to operationalise the first dimension of "repair literacy", "repair awareness"; the dimension of "repair competence" was mapped with two indicators K-1 and K-2 and the dimension "opportunity to repair" with statement G-1:

Question B-1 Repair Literacy Index:

"Before buying a device, I find out whether it can be repaired."

Question B-2 Repair Literacy Index:

"When purchasing a new appliance, the question of whether the appliance can be repaired is an important criterion for selection."

Question B-3 Repair Literacy Index (reverse coded):

"I replace devices even when they are actually still in order."¹¹

Question B-4 Repair Literacy Index:

"I would opt for a repair even if a new purchase were possible at the same price."

Question B-5 Repair Literacy Index:

"I would opt for a repair even if it would be quicker to buy a new one."

Question B-6 Repair Literacy Index:

"I would give up certain quality features such as waterproofness if the device could be repaired better in exchange."

Question K-1 Repair Literacy Index:

"I know where I can get such a device repaired."

Question K-2 Repair Literacy Index:

"I trust myself to carry out minor repairs."

Question G-1 Repair Literacy Index:

"There are enough places where you can have such a device repaired."

These nine questions were condensed via unweighted mean scores to form the Repair Literacy Index as well as partial indices per dimension.¹²

For robustness of methodology, the coding of the answers to the open questions was carried out by two independent coders. Already after the first round of coding, a very high intercoder reliability was recorded. For those codings where there was still no agreement, the assignment to a category was made after a corresponding discussion.

11 For methodological reasons, this question, which assumes a different direction of effect, was integrated into the questionnaire at this point. In order to compensate for the resulting effect on the index formation, the corresponding scores were recalculated in a modified form.

12 The index for repair literacy was calculated as the unweighted arithmetic mean of the answers to the nine questions mentioned. The respective sub-indices thus resulted from the unweighted arithmetic mean of the answers to questions B1-B6 ("awareness"), K1 and K2 ("competence"). The index for opportunity corresponds to the response value to question G-1. It should be mentioned that this conception is an initial proposal for operationalisation. Further studies on reliability and validity would be desirable.

2.2 Results

2.2.1 Descriptive results

aa Awareness

Figure 5 summarises the results with regard to the awareness dimension of sustainable consumption. This is most pronounced among consumers for the continued use of a digitally networked device that is still

in working order, with a mean value of 2.3.¹³ The majority of respondents (60%) do not replace appliances when they are actually still in good working order. However, 16% of respondents said that they also replace their devices early, regardless of this.

With regard to the statements that focus on the consideration of sustainable consumption patterns in the context of the respective purchase decision processes, the agreement values (with mean values

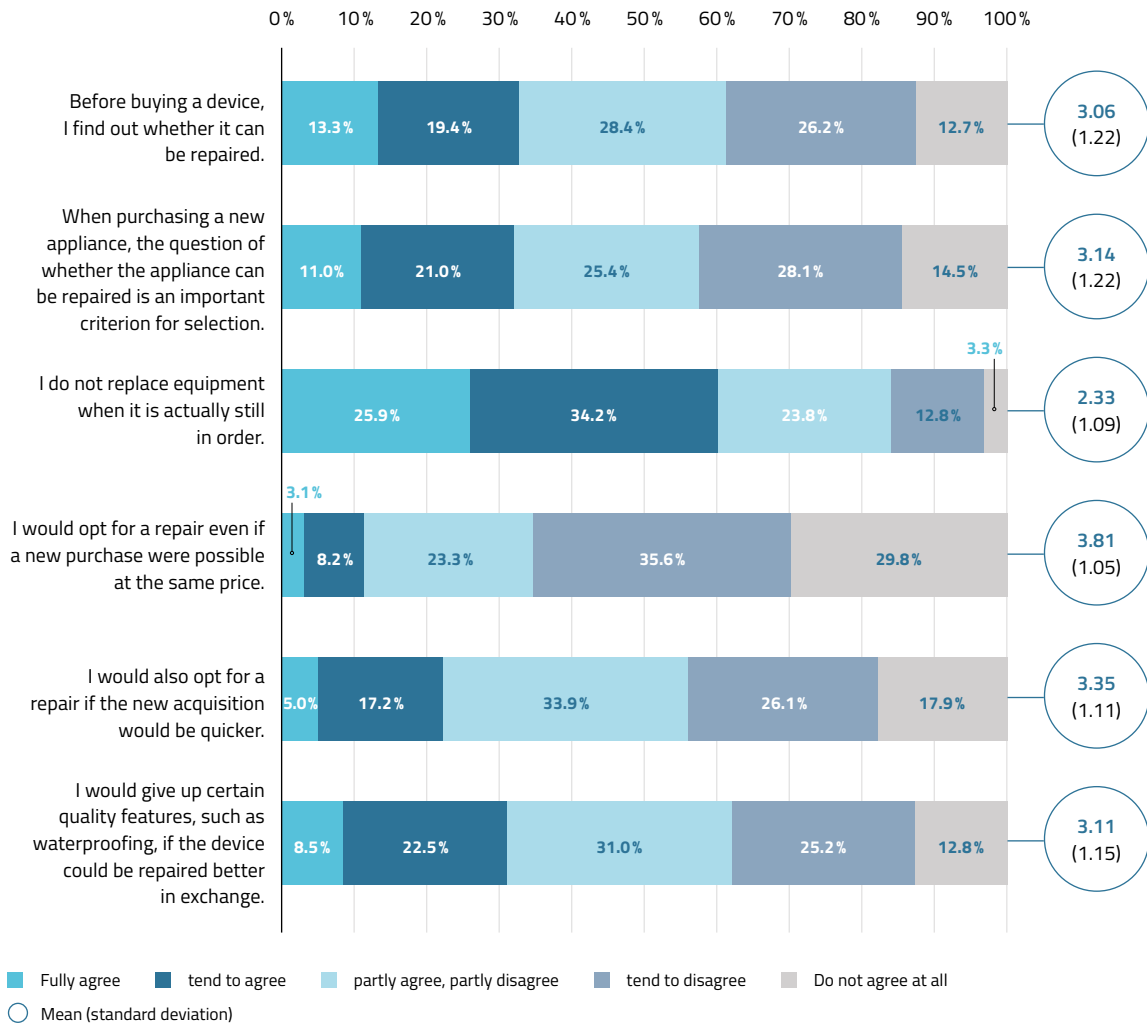


Figure 5: Indicators for recording respondents' repair awareness

Weighted values; respondents could answer on a scale from 1 ('strongly agree') to 5 ('strongly disagree'); deviations from 100 % are due to rounding; n = 1,021.

13 Since they were able to answer on a scale from 1 ("fully agree") to 5 ("strongly disagree"), there is a midpoint at answer option "3" that can be interpreted as indifference. Scale points above this midpoint can tend to be interpreted as agreement. The following percentages of agreement therefore represent the cumulative percentages of the selected scale points 1-2.

of 3.1 in each case) were comparatively low. Here, the majority indicated that aspects of repairability do not play a major role in the purchase decision. While 33% of respondents find out whether an appliance can be repaired before buying it, 39% do not.

Furthermore, 38% of the consumers surveyed are not prepared to forego other product and quality features in favour of repairability. Only 31% of the respondents would neglect, for example, waterproofing features when buying a digital device if this would make it easier to repair. The percentage of respondents for whom the possibility of repair is an important purchase criterion, with an agreement value of 32%, is lower than that of those for whom this is not a relevant selection criterion (no agreement indicated by 43% of respondents); in other words, to a large percentage of respondents, the repairability of a device has no influence on the purchase decision.

Awareness in regard to sustainable consumption is the lowest when respondents have to weigh up repair work against a new purchase in terms of time and price (mean values 3.4 and 3.8 respectively). As a result, only 22% of respondents agree with the statement that they would

also decide in favour of a repair if a new purchase would be quicker. The majority of respondents rejected this statement: 44% of respondents would decide to make a new purchase if it could be realised more quickly than a repair. An even clearer picture for the preference of new acquisitions over repairs examined here emerged with regard to the price factor: only 11% would decide in favour of a repair even if a new acquisition were possible at the same price. However, the vast majority of respondents (65%) would not be prepared to do so.

ab competence

Compared to the awareness dimension for repairs (mean value: 3.1), the competence dimension seems to be somewhat more pronounced according to the respondents' assessment (mean value 3.0).

Around 40 % of the respondents know where they could have the given appliance repaired. However, one in four respondents does not (28%). With regard to their own ability to carry out repairs, the situation is reversed: around 36% of respondents are clearly confident that they can carry out minor repairs themselves. However, for almost 40% this is not the case.

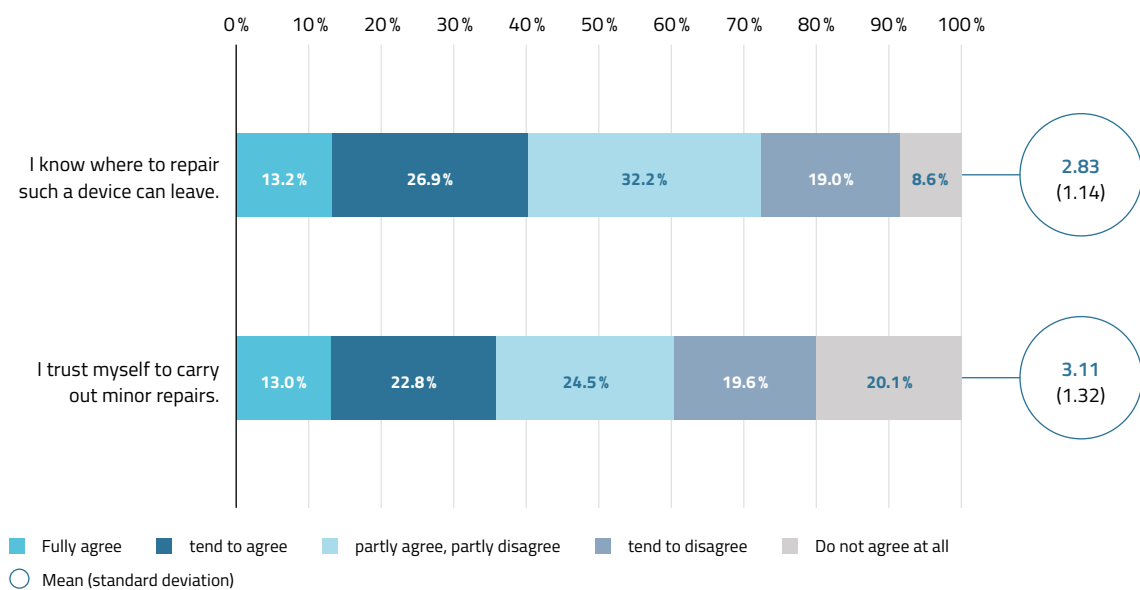


Figure 6: Indicators for recording the repair competence of the respondents

Weighted values; respondents could answer on a scale from 1 ('strongly agree') to 5 ('strongly disagree'); deviations from 100 % are due to rounding; n = 1,021.

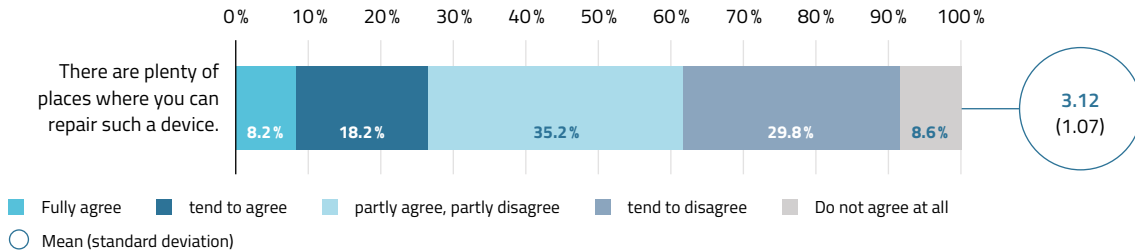


Figure 7: Distribution of response behaviour to the following statement: "There are enough places where you can get such a device repaired".

Weighted values; respondents could answer on a scale from 1 ('strongly agree') to 5 ('strongly disagree'); deviations from 100 % are due to rounding; n = 1,021.

c opportunity

Responses to the question on the opportunity dimension in the context of the right to repair correspond to the assessment of the questions on the operationalisation of the awareness dimension. For example, one in four respondents (26%) agrees with the statement that there are enough places where a digitally networked device can be repaired. For more than one in three respondents (38%), however, this is not the case (cf. Fig. 7).

b Assessment of selected measures

In addition to the questions and analyses mentioned up to this point, the survey also included some supplementary questions on the importance of some selected aspects in the area of the right to repair. This was also intended to enable an assessment of possible measures and to point out perspectives. Specifically, the following question was asked:

"How important are the following aspects for you to repair digital devices more often in the future than today?"

1. *A so-called repair label, containing summary information on whether and how well the appliance can be repaired.*
2. *Offer of a free replacement unit during the repair*
3. *Possibility to carry out repairs yourself instead of in a workshop*
4. *More information about the reparability of a device".*

The respondents' answer options in this part of the survey ranged from *a. very important, b. rather important, c. partly important, d. rather unimportant to e. not important at all.*

The most important thing for those surveyed is the offer of a free replacement appliance for the duration of the repair (mean value 2.0). Of similar importance is to have more information about the reparability of the appliance (mean value 2.1) and a so-called repair label (mean value: 2.3). Comparatively less important, but still significant, was the possibility to carry out repairs oneself instead of going to a workshop (mean value: 2.7) (cf. Tab. 1).

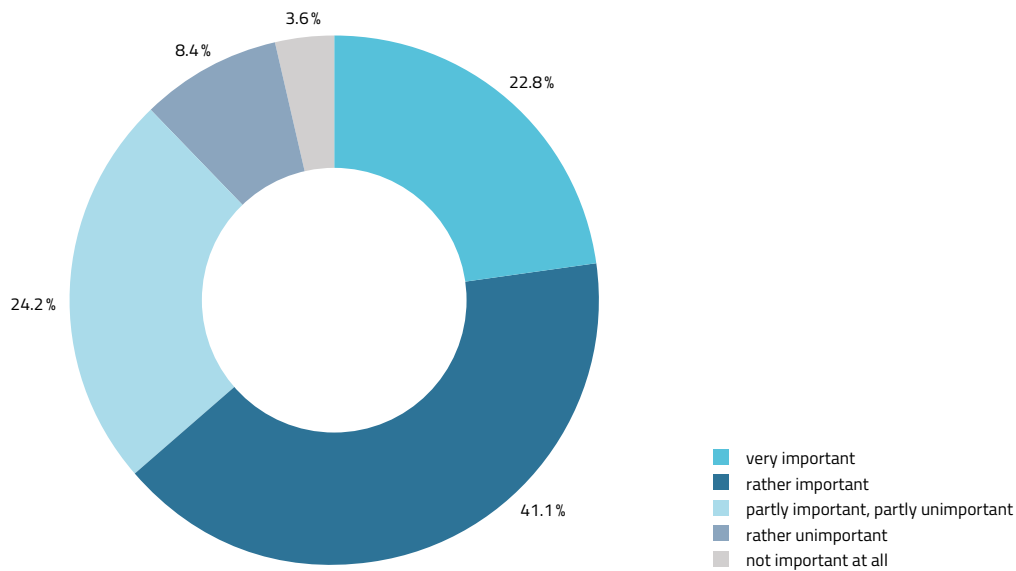


Figure 8: Respondents' assessment of the importance of a repair label

Weighted values; the figure represents the distribution of answers to the following question: "How important are the following aspects to you so that you repair digital devices more often in the future than today? ... a so-called repair label, which contains summary information on whether and how well it is possible to repair the appliance". Respondents could answer on a scale from 1 ("very important") to 5 ("not important at all"); deviations from 100 % are due to rounding; n = 1,021.

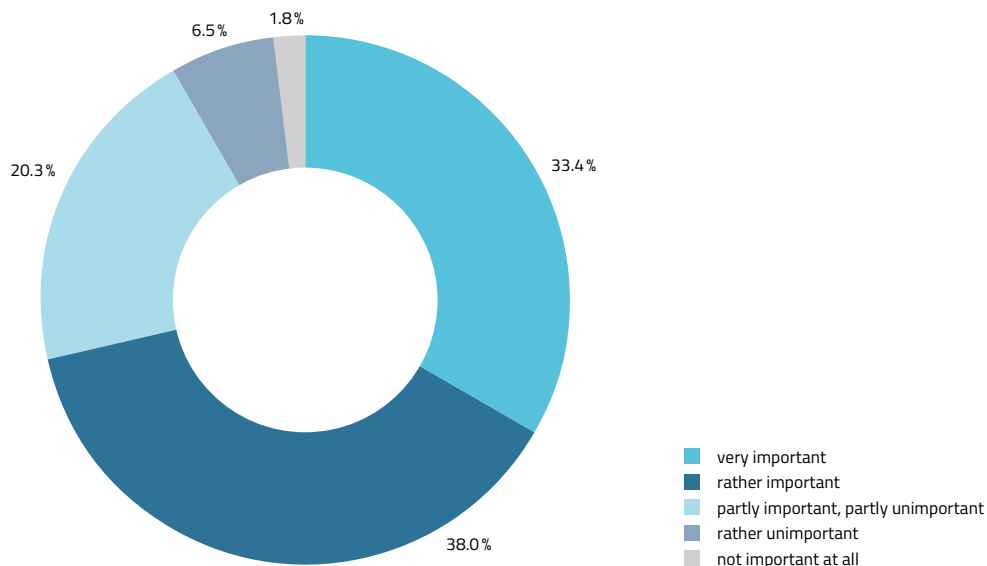


Figure 9: Respondents' assessment of the importance of the offer of a free replacement appliance during repair

Weighted values; the figure represents the distribution of answers to the following question: "How important are the following aspects to you so that you repair digital devices more often in the future than today? ... offer of a free replacement device during the repair". Respondents could answer on a scale from 1 ("very important") to 5 ("not important at all"); deviations from 100 % are due to rounding; n = 1,021.

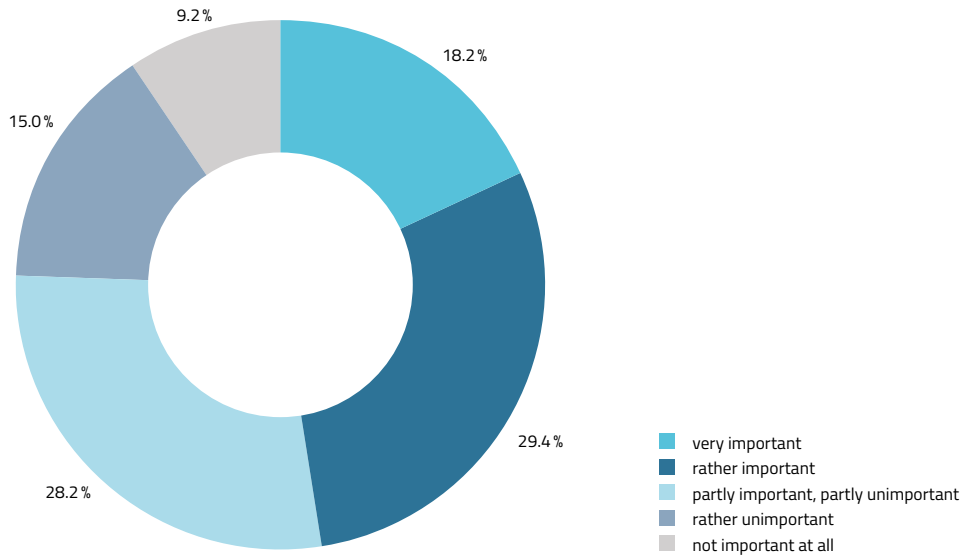


Figure 10: Respondents' assessment of the importance of being able to carry out repairs themselves instead of in a workshop

Weighted values; the figure represents the distribution of answers to the following question: "How important are the following aspects to you so that you repair digital devices more often in the future than today? ... possibility of doing repairs yourself instead of in a workshop". Respondents could answer on a scale from 1 ("very important") to 5 ("not important at all"); deviations from 100 % are due to rounding; n = 1,021.

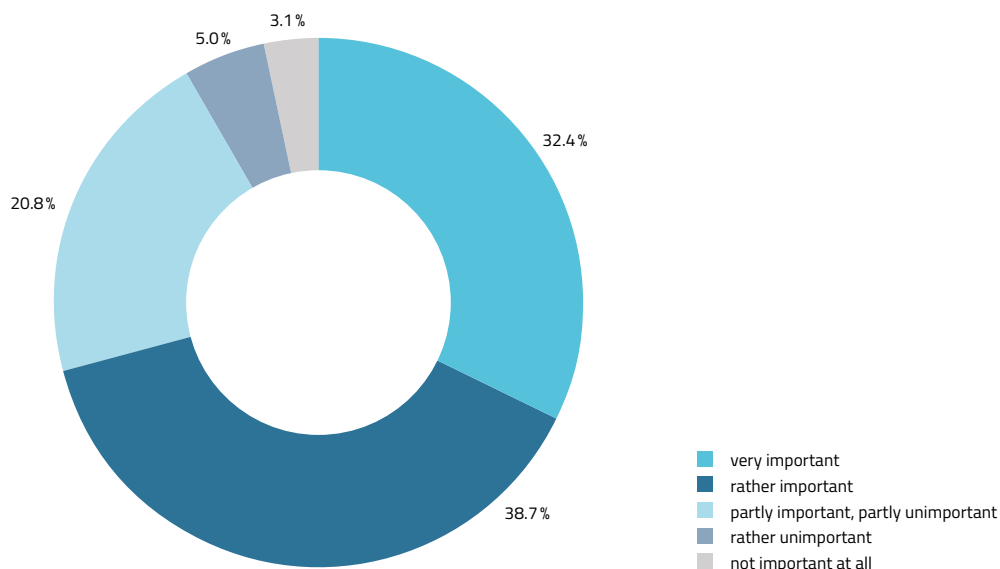


Figure 11: Respondents' assessment of the importance of more information about the repairability of a device

Weighted values; the figure represents the distribution of answers to the following question: "How important are the following aspects to you so that you repair digital devices more often in the future than today? ... More information about the repairability of a device". Respondents could answer on a scale from 1 ("very important") to 5 ("not important at all"); deviations from 100 % are due to rounding; n = 1,021.

Specifically, the vast majority of respondents would find the offer of a free replacement appliance during the repair important or even very important (71%). Only a good 8% of respondents would find such an offer rather unimportant or not important at all. Likewise, the majority of respondents would like more information about the repairability of an appliance and therefore rate this as important or even very important (71%). Only 8% of the respondents would find such an option rather unimportant or not important at all.

Almost 64% of the respondents consider a repair label containing summary information on whether and how well a repair of the appliance is possible to be important or even very important. Only 12% of the respondents would find such a measure rather unimportant or not important at all. In addition, a large proportion of respondents are in favour of carrying out repairs themselves instead of going to a workshop (48%). A good 24% of respondents, on the other hand, rated such an option as rather unimportant or not important at all (cf. Fig. 8 – 11).

Table 1: Importance of certain repair measures

Rank	“How important are the following aspects for you to repair digital devices more often in the future than today?”	Average assessment of importance (in brackets: standard deviation)
1.	Offer of a free replacement unit during the repair	2.05 (0.98)
2.	More information about the repairability of a device	2.08 (1.0)
3.	A so-called repair label, which contains summary information on whether and how well the appliance can be repaired	2.29 (1.02)
4.	Possibility to carry out repairs yourself instead of in a workshop	2.68 (1.2)

Weighted values; average of the values with which the respondents expressed how important certain measures to increase the repair rate are to them on a scale from 1 (“very important”) to 5 (“not important at all”); the standard deviation is given in brackets (the higher the value, the further apart the statements on the respective statement); own calculation and presentation based on the SVRV survey; n = 1,021.

The reasons for a corresponding evaluation of the individual measures were asked with an open-ended question (“Why would this be important to you?”). This question was always asked if the respondents had previously rated the importance of at least one of the measures mentioned for increasing the repair rate as “very important” or “rather important”. The corresponding statements were then categorised. The results are shown in the following Fig. 12.¹⁴

It can be seen that most answers (35%) can be assigned to the category “sustainability, conservation of resources and environment”. Second came the category “decision-making autonomy/information transparency” (22%), followed by “financial reasons” or the need for “saving money” (13%).

¹⁴ The coding of the answers to the open-ended questions was done by two independent coders to ensure the reliability of the coding. Already after the first round of coding, there was a very high intercoder reliability. For the codings where there was still no agreement, the assignment to a category was made after a corresponding discussion.

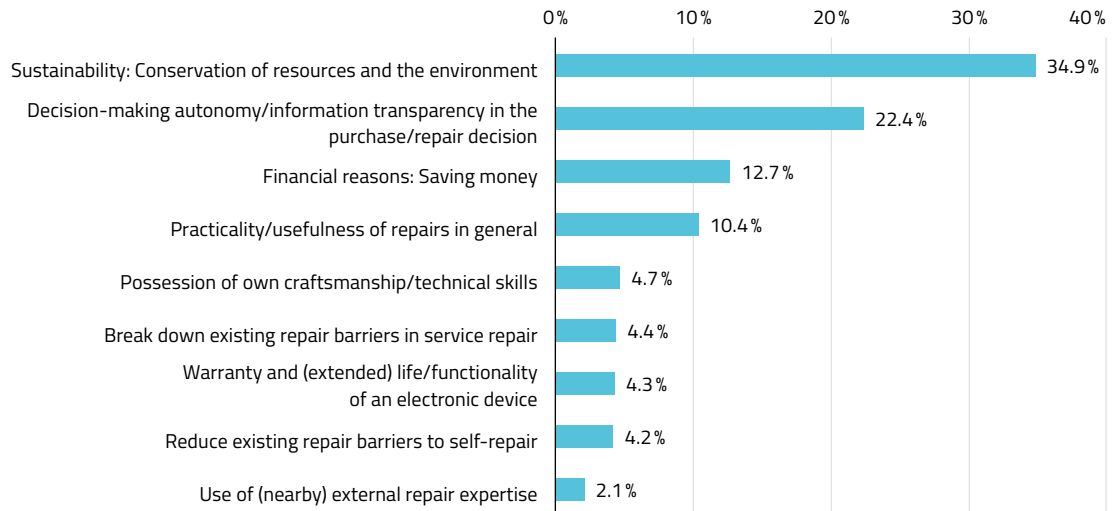


Figure 12: Respondents' reasons for the importance of measures to increase the repair rate

Weighted values, shares (rounded in percent) of the named answers to the open-ended question "Why would this be important to you?" if the respondents had previously rated the importance of at least one of the named measures for increasing the repair rate as very or rather important; based on a coding of the free texts; n = 790; the answer categories "no indication/no reason" or "don't know" are not shown.

2.2.2 Socio-demographic differences between respondents

In addition to the analyses presented up to this point, some socio-demographic analyses were also carried out to gain an understanding of the dimensions of *opportunity*, *competence* and *awareness*, in terms of age and gender, formal education level and net household income. Here, both the mean differences with regard to "repair literacy" already outlined between the individual groups and the mean differences of the respective respondent groups against the average of all respondents were examined (see Table 2 for the results). Firstly, an overall value of 3.1 was found for "repair literacy", with a standard deviation of 0.62. This value can be seen as a sign of a predominant indifference of the respondents with regard to the three dimensions. If one looks at the individual dimensions, slight differences can be seen.

When looking at the values in a more differentiated way, first of all, statistically significant differences can be found in relation to *gender*, although the effect size is rather small.¹⁵

The men and women surveyed differ statistically significantly in their *repair competence* assessments. Compared to the average of all respondents, men rate themselves as having above-average repair skills, whereas women rate their repair skills as below average compared to the average of all respondents. This is presumably due to the response behaviour to the question K-2 "I trust myself to carry out minor repairs". When asked in this way, the female respondents were significantly less confident in carrying out repairs themselves than the male respondents.¹⁶ The male respondents also tended to value having the possibility to carry out repairs themselves more than in a workshop, compared to the female respondents.

Compared to female respondents, a greater number of male respondents desire to be informed about the repairability of an appliance with the help of a repair label. Women, on the other hand, are more interested in being offered a free replacement appliance for the duration of the repair than men when it comes to incentives for repairs. Furthermore, *repair awareness* during the use of a digitally networked device seems

¹⁵ The differences in relation to gender are statistically significant, but on average have a low effect size. In addition to statistical significance, the effect size is generally used to assess the significance of study results.

¹⁶ However, these results should be considered against the background of known gender biases in competence assessments.

Table 2: Repair literacy in different respondent groups

n		Overall index	Awareness	Competence	Opportunity
		3.1	3.13	2.97	3.12
Gender					
Women	515	3.11	3.13	3.08**	3.05
Men	506	3.08	3.13	2.85**	3.21
Age					
until 34 years	271	3.11	3.25**	2.80***	2.90**
35 to 54 years	365	3.12	3.17	2.95	3.22*
55 to 69 years	308	3.07	3.04*	3.07*	3.2
From 70 years	77	3.02	2.93*	3.23*	3.17
Income					
under 1,500 euros	135	3.06	3.09	3.02	2.92*
1,500 to under 3,000 euros	334	3.12	3.17	2.95	3.13
3,000 to under 4,500 euros	233	3.04	3.09	2.88	3.09
4,500 euros and more	124	3.16	3.21	3	3.2
Educational level					
Low	146	3.05	3.09	2.93	3.03
Medium	499	3.1	3.14	2.97	3.12
High	376	3.11	3.14	2.98	3.17

The average index values per respondent group were tested against the average of all respondents (t-test), *** = highly significant difference ($p < 0.001$) / ** = highly significant difference ($p < 0.01$) / * = significant difference ($p < 0.05$), findings highlighted in light green are significantly smaller, i.e. 'better' than the scale average (smaller values indicate higher agreement). 'better' than the scale average (smaller values express higher agreement), findings highlighted in light blue are significantly larger than the scale average (larger values express lower agreement), income refers to the monthly net household income; Education refers to the highest formal educational attainment of the respondent, low = lower secondary or primary school leaving certificate, left school without a school leaving certificate; medium = intermediate school graduation certificate or completion of polytechnic upper secondary school (POS), still in school education; high = school graduation certificate, entrance qualification for a technical college (upper secondary school or extended upper secondary school, EOS); all statistics refer to weighted results, $n = 1021$.

to be more pronounced among female respondents: Compared to female respondents, male respondents say that they are more likely to replace devices when they are actually still in order. In contrast, *repair awareness* in connection with the purchase decision of an appliance is somewhat more pronounced among male respondents: they would rather rely on certain quality features than female respondents if the appliance could be repaired better as a result.

There is also a gender difference in the evaluation of the *opportunity* dimension. Male respondents tend to agree less with the statement that there are enough repair jobs compared to female respondents.

There were no significant differences between the respondents in terms of *formal education*. The differences were also small with regard to *net household income*. There was only one significant difference compared to the average of all respondents: people with a net household income of less than € 1,500 rated the opportunities for repairs as sufficient on average.

Larger differences were again found with regard to the characteristic “age” in relation to the individual dimensions of sustainable consumption.¹⁷

The age group up to 34 years has a significantly lower *repair awareness* than the 55- to 69-year-olds and the over 70 year olds. Furthermore, the 35- to 54-year-olds have a significantly lower awareness than the over 70-year-olds. The 55- to 69-year-olds and the over 70-year-olds consider themselves to be less *repair-competent* than the up to 34-year-olds. Finally, those aged up to 34 were more likely to claim that there are enough places to get something repaired than those aged 35-54 and 55-69.

At the same time, the vast majority express their wish for measures to increase the repair rate. Instruments like a “repair label”, “consumer information” as well as the free provision of replacement appliances seem to be of particular importance. The majority of respondents (64%) consider a repair label containing summary information on whether and how well the appliance can be repaired to be important or even very important. While this aspect should probably be addressed by suitable government measures, the provision of replacement appliances could perhaps also be implemented by suitable private-sector measures or corresponding business models, which could be promoted by the government if necessary.

2.3 Conclusion

Overall, our empirical study shows that there is still considerable potential in all three dimensions associated with “repair literacy”, which could have an influence on the development of a “repair culture” in Germany, in terms of raising awareness and empowering consumers towards repairing.¹⁸ The index value determined for “repair literacy” can be seen as a sign of indifference on the part of the respondents with regard to the three dimensions. The survey also shows that the reparability of an appliance is obviously not a major factor in the purchase of a product. For a high percentage of respondents (43%), the reparability of an appliance has explicitly no influence on the purchase decision. In addition, the willingness to forego new products, time of use or certain qualities in favour of repair is rather low. Many people apparently lack the basic awareness of this important facet of sustainable consumption. In addition, there is obviously still a need for action with regard to the available opportunities for repair.

17 It should be noted, however, that differences in this characteristic do not allow the conclusion that age-correlated developmental processes determine awareness. Differences could also be due to belonging to different generations that were exposed to different influences in different phases of their development over the long term (“cohort effect”). However, a single measurement cannot provide information about this.

18 The following quote from an 80-year-old consumer in response to the open question sums it up: “I would rather buy a new appliance than repair the old one”.

3. International and supranational regulations

The promotion of sustainable product use and the development of suitable strategies is not a purely national or union issue, but one of global relevance. As the following consideration of solutions in different countries of the world will show, not only a horizontal or sector-specific right to repair can be helpful, a steering effect can also be achieved through incentive mechanisms such as a reduction in value-added tax or repair bonuses. Due to their resource intensity and relevance to everyday life, private electrical appliances are a prime focus area of the regulations to date, in addition to the automotive industry. So far, however, creation of individual measures and instruments has been the only option. An orchestrated right to repair that would combine all the necessary facets of economic feasibility and legal enforceability does not yet exist.

3.1 USA

The legal situation in the USA is characterised by two special features. First, the discussion about repairs and repairability is typically analysed from a competition perspective. Environmental considerations play almost no role – and where they do, legislators put their trust in the market. The second special feature is the strong position of the states. As is well known, there is no general private law in the USA like in Germany, where the BGB has set the standard since 1 January 1900. The individual states have wide-ranging legislative powers, not only in private law, but also in environmental law. Therefore, in political practice, development in this sector is often driven at state level.

In a report to Congress last year, the Federal Trade Commission (FTC) examined the status quo on the right to repair in the United States. The study came to the conclusion that it is crucial to counter repair restrictions by manufacturers with appropriate regulations and to inform consumers accordingly.¹⁹

The debate on offering consumers the possibility to repair their products goes back more than 40 years in the USA: Section 102(c) of the 1975 Magnuson-Moss Warranty Act prohibits warrantors from making warranty coverage conditional on the consumer using a replacement part of the same brand or a manufacturer-owned repair service for the repair. Manufacturers of branded goods had been particularly active in seeking to block the market access of producers of so-called identical spare parts. A parallel regulation also exists in EU law. The Motor Vehicle Block Exemption Regulation (EU) No. 461/2010 is intended to ensure fair competition in the motor vehicle spare parts and service market. Among other things, it ensures the possibility for parts manufacturers to supply their products directly to the after-sales market and to affix their brand name also to supplied parts (“double branding”), and stipulates that the quality of a part as an “original spare part” does not depend on the origin of the part, but on the quality of the part.

In July 2021, shortly after the publication of the study, US President Biden instructed the FTC to develop a draft regulation for a right to repair that would apply to all product groups, with a particular focus on smartphones and agricultural equipment. While many U.S. states already have draft bills on the subject, only a few have passed concrete regulations. These include the Massachusetts Right to Repair Act of 2012, which

¹⁹ Federal Trade Commission, *Nixing the Fix: An FTC Report to Congress on Repair Restrictions*, p. 54, available at: https://www.ftc.gov/system/files/documents/reports/nixing-fix-ftc-report-congress-repair-restrictions/nixing_the_fix_report_final_5521_630pm-508_002.pdf.

obliges car manufacturers to make diagnostic and repair information (especially software) available to vehicle owners and independent repair shops. In view of the rapid development in the connected cars sector and the associated relativeness of data generation and data exchange, its extension was successfully put to the vote in 2020 as part of an initiative. Vehicles sold from 2022 onwards will have to be equipped with a standardised open access platform that allows consumers and independent repairers to access the vehicle's mechanical data. This legislation has met with resistance from the automotive industry. In response to the new regulations, Kia of America and Subaru of America have disabled telematics in their vehicles and the *Alliance for Automotive Innovation* has filed a complaint against the law, primarily based on the fact that it is not possible for car manufacturers to provide open access platforms in their vehicles without violating applicable law, in particular data protection law. In addition, the implementation of such a functionality poses considerable cybersecurity risks. The decision, originally expected by 1 July 2022, was once again postponed.

A right to repair explicitly for electronic devices was enacted by the New York State Senate in June this year in the Digital Fair Repair Act. It obliges all manufacturers who sell digital electronic products within the state to make spare parts, tools and repair instructions available to consumers and independent workshops. The law does, however, provide for some exceptions. It does not cover vehicles, household appliances, medical equipment or radio equipment for public services. The Act is a pioneer in that it is the first to provide for explicit right to repair rules for a wide range of electrical appliances.

However, the regulatory approach remains unchanged, focusing on preventing monopolistic business practices instead of making considerations on sustainability.

Since 3 June 2022, wheelchair users in Colorado have been able to repair their wheelchairs themselves or have them repaired by independent repair companies. The new law enables them to obtain spare parts, software and instructions directly from the manufacturer. In this case, the law serves as protection against unfair business practices. Thus again, sustainability goals have a shadowy existence in the legislation on the right to repair.

3.2 EU Member States

In Europe, some EU Member States have already taken steps to strengthen the position of repair, especially of electrical appliances, in the sense of the circular economy.

3.2.1 Repair index (France)

The French repair index ("Indice de réparabilité"), which was introduced in 2021 and is based on Art. 16 of the "Anti-Waste Law for a Circular Economy", has attracted great attention. A label on the product indicating a "repair score" of up to 10 is intended to enable consumers to choose repairable products when buying. At the same time, the obligatory labelling is an incentive for manufacturers to make their products as repairable as possible and to make spare parts and information available and accessible. However, the index does not create an obligation to actually design repairable products. One year after it came into force, 76% of buyers found the index helpful, but in some cases difficult to understand. Moreover, the index is far from being used across the board and the repair score is not calculated and awarded by an independent body. Instead, manufacturers can calculate the repair score themselves using the official handbook of the Ministry of Ecological Transition and Territorial Cohesion. Whether manufacturers have calculated the score correctly is verified by the Directorate General for Competition, Consumer Protection and the Fight against Fraud (DGCCRF).

Less prominent, but already in force since 2014, is the "loi Hamon". The law aims to strengthen consumer protection and redefine the relationship between suppliers and traders. The French lawmaker took the Consumer Rights Directive 2011/83/EU as an opportunity to initiate reforms that go far beyond EU law. This development is not incompatible with EU law which has only tackled this topic in a rudimentary way at best.

Unlike Germany, where consumer law is woven into the Civil Code (BGB), the relevant rules of consumer law in France are summarised in the Code de la Consommation. Art. R. 111-4 obliges manufacturers and importers to inform professional sellers about the period of availability of spare parts. The same

obligation applies to sellers vis-à-vis consumers. This way of thinking corresponds to the logic of the French Code Civil, which, unlike the German Civil Code (BGB), subjects manufacturers and traders to a largely identical canon of obligations. Both can specify either a deadline (e.g. four weeks) or a specific end date. However, manufacturers and importers can also avoid making a statement as the minimum period is not provided for by law. If an availability period is indicated, the delivery of spare parts during this period must take place within two months, according to Art. R. 111-4 (2) Code de la Consommation.

3.2.2 VAT Directive 2006/112/EC

Several countries in the EU (e.g. Sweden, Belgium and the Netherlands) make use of the possibility opened up by the EU Directive on reduced VAT rates (2006/112/EC) to permanently reduce VAT for services that are not expected to distort competition in the European internal market. According to Annex III (No. 19) of the Directive, this applies to “small repair services relating to bicycles, footwear and leather goods, clothing and household linen” Annex IV Nr. 1 a-c). However, electronic products are not covered. The recitals of the directive do not address sustainability aspects, but focus primarily on harmonisation to avoid distortions of competition. The relief is intended to benefit small and medium-sized enterprises. VAT reliefs on repairs on a larger scale, especially for electrical appliances, could at the same time constitute an incentive mechanism for consumers.

3.2.3 Repair bonuses

In autumn 2020, the City of Vienna launched the support voucher programme “Wien repariert’s – Der Wiener Reparaturbon”. The repair voucher could be used for any kind of repair, regardless of the item to be repaired. It covered 50% and a maximum of 100 € of the gross repair costs. The subsidy amount was immediately deducted from the total price; an ex-post reimbursement application was not necessary. Over 35,000 appliances were repaired during the previous campaign periods from September to December 2020, March to June and November 2021. 62% of these were

electronic devices, over half of them mobile phones and tablets. The repair was successful in over 90% of all cases. Since April 2022, the repair bonus is available nationwide.

There is also a comparable project in Germany at the state level: the “Reparaturbonus Thürigen” is a joint project of the Thuringian Ministry for the Environment, Energy and Nature Conservation and the Thuringian Consumer Centre (VZTH) to avoid electronic waste. Funding is provided for the repair of household electrical appliances (e.g. kitchen appliances, consumer electronics, IT and telecommunications equipment) up to 50% of the gross repair costs, up to a maximum of €100 per person and calendar year. The application for reimbursement can be submitted after the payment has been made. However, services such as cleaning, software updates, maintenance, etc. are excluded from the subsidy. After a total of 6,500 applications were processed within four months in 2021, at the time of writing, 1,225 applications had already been submitted within four days since the new edition of the programme on 31 May 2022. The applications mainly relate to IT and household technology, in particular mobile phones, washing machines and dishwashers.²⁰

In order to maximise the incentive effect of such a repair bonus, it should be made available with as little red tape as possible, as seen in the Vienna model. The requirement to submit a post-factum reimbursement application means additional time and bureaucratic effort and could cause uncertainty about the actual reimbursability. The repair bonus should thus be available as easily as possible.

3.3 Proposals of the European Commission

For the “progressive, yet irreversible” transition towards a sustainable economic system, the European Commission set itself the goal of creating a framework

20 <https://www.mdr.de/nachrichten/thueringen/reparaturbonus-100.html>.

for sustainable product policy in the Circular Economy Action Plan published in March 2020.

This will be achieved through a package of interlinked initiatives that shall lead to sustainable products, services and business models becoming the norm and consumption patterns changing so that no waste is generated in the first place. One of the key product value chains is electronics and ICT equipment, which is one of the fastest growing waste streams in the EU, with annual growth rates of 2%. One of the main reasons is the lack of repair- and recycling-friendly design of ICT products. For example, components are glued together so that individual parts cannot be replaced without irreparably damaging their substance. This not only promotes linear consumption patterns (produce-consume-discard), but also forces such patterns on users. Union-wide legal standards should address the sustainability of products and positively influence consumer behaviour. The appropriate instrument for this is Directive 2009/125/EC establishing a framework for the setting of ecodesign requirements for energy-related products (hereinafter: Ecodesign Directive). In its current form, however, the Ecodesign Directive only covers a small number of product groups due to its restriction to energy-related products.

The “Circular Electronics Initiative” foreseen in the European Commission’s Circular Economy Action Plan aims to transform the Directive into a regulation to extend its scope and the regulatory measures for electronics and ICT, including mobile phones, tablets and laptops under the current Ecodesign Directive, so as to design equipment for energy efficiency and durability, repairability, retrofittability, maintenance, reuse and recycling.

Obstacles to sustainable use of products arise not only from product design. At various points, consumer sales law also proves to be dysfunctional from the perspective of sustainable product use. For this reason, an amendment to the Sale of Goods Directive is under consideration, intended to ensure that the internal market functions while maintaining a high level of consumer protection. When the 2019 reform transferred this regulatory approach to the digital economy, sustainability aspects were hardly taken into account. The necessary adaptation of consumer law is to take place in the course of the “Green Deal”.

Various measures are under discussion, ranging from the possibility of voluntary repair obligations and the extension of the warranty period to a restriction of the freedom of choice in the context of supplementary performance (repair before supplementary delivery) or the possibility of a replacement with “refurbished” products. Politically, everything seems to be heading towards a right to repair. The intended revision of the Sale of Goods Directive goes hand in hand with the reform of the Ecodesign Directive. The latter is intended to lay the foundations for a repair-friendly design.

3.3.1 Extension of the Ecodesign Directive

The starting point of the Union’s sustainability efforts with regard to the use of environmentally friendly products was the introduction of Integrated Product Policy (IPP), which is a strategy to strengthen and reorientate product-related environmental policy measures with the aim of promoting a market for more environmentally friendly products. So far, eco-design rules could only be set for energy-related products.

Art. 2 (1) of the current Ecodesign Directive defines an energy-related product as “any good that has an impact on energy consumption during use which is placed on the market and/or put into service, and includes parts intended to be incorporated into energy-related products covered by this Directive which are placed on the market and/or put into service as individual parts for end-users and of which the environmental performance can be assessed independently”. However, ecodesign requirements do not exist for every product that (theoretically) falls under this definition. Rather, the Ecodesign Directive only provides a framework for the adoption of implementing regulations that set out specific ecodesign requirements for specific product groups. Whether ecodesign requirements apply to a product group depends on certain criteria: The product must have a significant sales and trade volume (indicative value > 200,000 units/year) and have a significant environmental impact, as well as considerable potential for improvement in terms of its environmental impact without entailing excessive costs (Art. 15 (2) Ecodesign Directive). Article 15 (4) of the Ecodesign Directive provides for a small-step and time-consuming procedure for the adoption of an implementing regulation, which is probably one of the main reasons why regulations have existed for

only a small number of product groups.²¹ The unused potential of the Ecodesign Directive to set Union-wide sustainability-related product standards is to be exploited more efficiently in the future. The electronics and ICT sector is in particular focus.

The objective of the “Circular Economy-Orientated Electronics Initiative” is to regulate electronics and ICT, including mobile phones, tablets and laptops. These devices should be designed for energy efficiency and durability, reparability, retrofittability, maintenance, reuse and recycling. In addition to improved consumer information, access to spare parts and repair services as well as retrofitting should be made possible or simplified.

The implementing regulations that came into force on 1 March 2021 contain “resource efficiency requirements” for household dishwashers, washing machines, dryers and refrigerators, among others, and are an important step towards the circular economy. For the first time, obligations on reparability had been integrated, complementing earlier requirements limited primarily to energy efficiency. However, the newly implemented regulations only apply to a few product groups and do not create comprehensive codesign requirements with regard to resource efficiency. Moreover, they are concerned “only” with the products and their manufacturing and recycling processes themselves, but not the processes for storage and provision of spare parts and the testing mechanisms with regard to quality and quality requirements. In this context, a number of new questions arise.²² The reference points for future codesign requirements will be, for example, the new material efficiency standards of CEN/CENELEC.²³ A reading of these standards with regard to mobile phones and tablets shows, for example, that for the assessment of durability and reparability, the

identification of priority parts is crucial and that there are advantages and disadvantages of a rather short list of priority parts versus a longer list with more detailed specific requirements and possibly a weighting of parts.²⁴ Research on smartphones also shows that there are trade-offs between reliability and repair strategies.²⁵

3.3.2 Amendment of the Sale of Goods Directive

The European Parliament has set decisive accents in the discussion on a right to repair at an early stage. The motion for a resolution submitted by the Committee on the Internal Market and Consumer Protection identifies major obstacles to opting for repair, including the lack of information, the lack of access to replacement parts, the lack of standardisation and interoperability, other technical obstacles, as well as the level of repair costs.²⁶ It emphasises that goods with digital elements require special attention, in particular software updates should be made available for a minimum period of time. The following essential goals are named: improved access to maintenance and repair information for all actors involved in the repair, availability of spare parts as well as improved consumer information. Furthermore, the position of consumers must be strengthened by longer liability periods for some product categories. In addition, there is a need for an incentive to decide in favour of a repair instead of a new delivery within the framework of supplementary performance under consumer sales law. The idea of anchoring repair as a priority remedy in the event of a defect goes one step further. The supply of a replacement product would only be possible under certain conditions.

21 This has resulted in the proposal of the Resources Commission of the German Environment Agency to accelerate the procedure by means of a product labelling body that records and provides certain product information from manufacturers transparently and on a mandatory basis for all existing and newly introduced products, e.g. on resource efficiency and recyclability. For more details see: Position of the Resources Commission of the German Environment Agency, August 201: Product Labelling Body for the promotion of product resource efficiency and recyclability, <https://www.umweltbundesamt.de/publikationen/product-labelling-body-for-the-promotion-of-product>

22 In the project “Scientific Investigations on Product Efficiency” funded by the Federal Ministry for Economic Affairs and Climate Protection, questions on the reparability, longevity or recyclability of electrical and electronic equipment are being investigated in this context, among others (cf. <https://netzwerke.bam.de/Netzwerke/Content/DE/Projekt-Produkteffizienz/produkteffizienz.html>).

23 https://standards.cencenelec.eu/dyn/www/f?p=205:7:0:::FSP_ORG_ID:2240017&cs=18A65BEA4289B745403E9407952618CE3.

24 Cf. Schischke et al. 2022.

25 Cf. Cordella et al. 2021. In this context, reference should also be made to the publication by Bracquene et al. 2021, which refers in particular to rating systems for the reparability of products.

26 European Parliament resolution on the right to repair, recital H., available at: https://www.europarl.europa.eu/doceo/document/B-9-2022-0175_EN.html.

However, the authority to act lies with the European Commission, which must initiate the legislative procedure. In the Declaration of Intent on the State of the Union 2021, the European Commission announced a legislative proposal on the right to repair as one of the most important initiatives for 2022.²⁷ From January to April 2022, the European Commission conducted a public consultation on the “Sustainable Consumption of Goods – Promoting Repair and Reuse” initiative. In the impact assessment consultation, the European Commission presented various options for action, including extending the warranty period, giving preference to repair and reuse of goods, and of repair as opposed to replacement delivery within the framework of supplementary performance under sales law, as well as the possibility of subsequent delivery of “refurbished” products. So far, such a proposal has not yet been put forward. The responsible representative of the European Commission, Dirk Staudenmayer, announced at an event of the European Law Institute that everything is heading towards the anchoring of a right to repair, possibly coupled with incentives for making use of such a right. However, the European Commission has not yet considered integrating the right to repair into the supply chain, i.e. organising sustainability and consumer protection along the value chain. The considerations under EU law on the harmonisation of the various national regulations on the reorganisation of responsibilities in the supply chain form a third pillar, standing alongside the reform of the Ecodesign Directive and the Sale of Goods Directive.

In this policy brief, we argue that an amendment of the Sale of Goods Directive should create an explicit link to the Ecodesign Directive and the planned regulation on supply chains, while at the same time taking into account the great divergence of products and their repairability. Only in such a perspective does a uniform right to repair make any sense at all. Such a link should not only include the explicit reference in the Sale of Goods Directive to the ecodesign rules in the context of the concept of defect and an accompanying product group-specific adjustment of the limitation periods, but also the positioning of the right to repair in the supply chain.

3.3.3 Amendment of Directives 2005/29/EC and 2011/83/EU

In addition to creating rules for sustainable products, one of the European Commission’s main concerns in implementing the objectives of the Circular Economy Action Plan with regard to a sustainable product policy is to improve the position of consumers by providing information on sustainability. The aim is to promote conscious purchasing decisions by consumers through information, in order to ultimately promote sustainable consumption patterns as a whole. In addition, business practices that mislead and prevent sustainable consumption decisions should be eliminated. In its report on the situation of consumers,²⁸ the SVRV made it clear that the ubiquitous use of information raises its own problems, discussed under the keyword “information overload”. If information is to be used as a tool, the European Commission must finally start to address the question of how this information could be communicated in the first place. The constant accumulation of new information rights and obligations raises questions on the feasibility of the instrument. Although the European Commission is well aware of the limits, it once again seems to rely primarily on “even more” information.

The means to this end are two envisaged amendments of two directives, namely Directive 2005/29/EC on Unfair Commercial Practices (hereinafter: UCP Directive) and the Consumer Rights Directive 2011/83/EU (hereinafter: Consumer Rights Directive). Under the current Consumer Rights Directive, businesses are currently only obliged to provide information on the essential characteristics of the goods or services. This includes specific information obligations about the existence of a statutory warranty right and additional commercial guarantees. However, in the absence of an obligation to provide information on the absence of commercial guarantees on durability, the Consumer Rights Directive does not offer sufficient incentives for manufacturers to provide such guarantees. In addition, there are no specific requirements to provide information on repairability.

27 https://ec.europa.eu/info/sites/default/files/state_of_the_union_2021_letter_of_intent_de.pdf

28 Available at: https://www.svr-verbraucherfragen.de/wp-content/uploads/SVRV_Gutachten_2020.pdf.

Information on “after-sales services” is only to be provided “where appropriate”.²⁹ The European Commission therefore proposes to add sustainability-related information requirements to the information requirements set out in Articles 5 and 6 of the Consumer Rights Directive, such as information on the existence and duration of the manufacturer’s commercial durability guarantees, the availability of free software updates and the durability and repairability of goods. The extended information obligations are subject to some restrictions for reasons of proportionality. For example, businesses should only be obliged to provide information on the existence of a commercial durability guarantee of the manufacturer with a term of more than two years if the manufacturer provides the business with this information (at all). This information would then have to be passed on to the consumer under Art. 5 (1) (ea) or Art. 6 (1) (ma) Consumer Rights Directive (proposal). The same applies to information about software updates of Art. 5 (1) (ec)-E or Art. 6 (1) (mc) and (md), Consumer Rights Directive (proposal). Information on the repairability of products is only obligatory if a repair code has already been defined for this product under EU law or if the manufacturer provides other relevant repair information. Traders are not obliged to inform consumers at the point of sale if this information is not available.³⁰ In the case of Germany, the integration of sustainability-related information obligations into the Consumer Rights Directive could lead to practical issues as it would open up the possibility of sanctioning their violation as an administrative offence with a fine according to Art. 246e EGBGB (*Einführungsgesetz in das BGB*). The Modernisation Directive has obliged the Member States to take such precautions. In Germany, these provisions have been implemented in Art. 246e EGBGB nF and Sections. Germany is known for not having a national consumer authority or any traditions of punishing violations of consumer law with regulatory means. Without the existence of such an authority, it seems difficult to imagine that infringements would be prosecuted and sanctioned in practice.

Furthermore, practices that mislead consumers through so-called “greenwashing”, early obsolescence and the use of unreliable and non-transparent sustainability labels should be prevented. Articles 6 and 7 of the UCP Directive on misleading actions and misleading omissions should be supplemented by environmental claims and claims about product characteristics. The black list of commercial practices set out in Annex I of the UCP Directive, which are considered unfair under all circumstances, should be expanded. This would entail, among other things, practices of affixing non-certified sustainability labels, making certain environmental claims, misleading presentation of goods and omissions of information. Last but not least planned obsolescence should always be considered unfair if the consumer is induced to replace the operating materials of a product earlier than is necessary for technical reasons.

29 COM 2022, 143 final, p. 3.0.

30 COM 2022, 142 final, p. 7.

4. Legal approaches to repairability

4.1 Administrative enforcement (Ecodesign Directive)

4.1.1 Regulatory level

Adopting the perspective of the status quo, this section presents the current developments, in particular the European Commission's proposal for an Ecodesign Regulation to extend the ecodesign approach, as well as the ecodesign preparatory study for smartphones and tablets.

aa Scope of application of the Ecodesign Directive

According to its Article 1 (1), the Ecodesign Directive covers "energy-related products", which according to Article 2 (1) are defined as "any good that has an impact on energy consumption during use". However, the Directive does not apply to every product that falls under this definition: instead, the Ecodesign Directive merely creates a framework within which so-called implementing measures, usually implementing regulations, determine the actual scope of the Directive.³¹ It thus only affects those product groups for which such an implementing regulation exists. Whether or not an implementing regulation is issued depends on the criteria of Article 15 (2) of the Ecodesign Directive, which include a "significant" sales and trade volume of the product, indicatively more than 200,000 units per year. In addition, the product must have a significant environmental impact and significant potential for the improvement of its environmental impact without entailing excessive costs. This has led to a patchwork of energy efficiency requirements for some products.

The list includes only a few product groups such as mains-operated vacuum cleaners (EU No. 666/2013), heating appliances (EU No. 813/2013), water heaters and storage heaters (EU No. 814/2013) or computers and computer servers (EU No. 617/2013).

In the future, however, ecodesign rules are to be applicable to a very wide range of products and set forth a broad array of targeted product requirements. Although specific and, where appropriate, horizontal regulations will still be issued for the respective product groups, the proposed regulation breaks away from the restrictive requirement of energy consumption relevance.

bb Ecodesign requirements for repairability

In the context of the right to repair, the Ecodesign Directive became relevant with the resource efficiency requirements applicable since 01.03.2021 and anchored in the implementing regulations for a total of ten product groups. Five of the implementing regulations provide for washing machines, dishwashers, refrigerators, electronic displays and servers for the first time requirements that are intended to positively influence the repairability of these products.

The Ecodesign Regulation is intended to expand not only the scope of application, but also the catalogue of ecodesign requirements. However, the Ecodesign Regulation itself does not definitively define the product requirements, as different measures may be necessary for different products and product groups. Rather, it formulates the aspects to be addressed by the implementing acts as targets. According to Art. 1 (1) of the Ecodesign Regulation, these include durability and reliability, reusability, retrofittability, repairability, maintenance and overhaul of products, but also the reduction of the carbon footprint or the recycled content in products. The time-consuming approach of adopting

31 Wormit 2021, pp. 873, 874.

specific implementing measures is thus continued. In order to do justice to the diversity of products, especially in the ICT sector, the European Commission should examine the extent to which horizontal requirements, for example the formation of product groups and classes, are reasonable and feasible.

(1) Existing requirements

Although the recitals of the Ecodesign Directive aim to improve both energy and resource efficiency (Recital 10 of the Ecodesign Directive), resource efficiency requirements for individual product groups were only explicitly regulated last year as a result of the Circular Economy Action Plan and the Ecodesign Work Programme. The measures taken already correspond in part to what consumer advocates and interest groups have been demanding for some time.³² They comprise the obligation to stock and supply spare parts, requirements for product design in the manufacturing process, as well as access to various information and are presented in the following overview.

(a) Even if end users decide to have a repair carried out, they – or the repair companies commissioned to carry out the repair – face the hurdle of finding the spare parts needed for the repair. It is not uncommon for a repair to fail because spare parts are simply not available. It is true that it is now theoretically possible to produce spare parts with a 3D printer (this is already used for aircraft parts, for example). This would have the positive side effect that the costly storage of spare parts would no longer be necessary. From a sustainability point of view, however, there is a risk of rebound effects: The operation of 3D printers is energy-intensive. For private households, the operation is therefore not worthwhile. Whether professional use in individual craft businesses for spare parts production would be ecologically worthwhile is not clear, but is to be checked in each case. For 3D printing, however, the necessary construction plans are usually lacking anyway. In addition, the (replacement) parts are protected by patents, design rights and copyrights, so that the reproduction of replacement parts using a 3D printer without the consent of the manufacturer or rights holder would be inadmissible. Therefore, end

users and repair companies currently tend to rely on the provision of spare parts by the manufacturer or an (independent) spare parts distributor. Nevertheless, these possibilities should be examined with regard to their effects on sustainability and considered for implementation.

Through artificial shortage of spare parts or charging disproportionate prices, manufacturers can control the after-sales market and steer end-users' decisions towards replacement if repair is only possible at disproportionate cost or not at all. Theoretically, it would be possible to open up the market with the help of competition law. However, the EU seems to be seeking a remedy through the resource efficiency requirements of the Ecodesign Regulation: for example, Annex II No. 8 of Regulation (EU) 2019/2023 obliges manufacturers of household washing machines and household tumble dryers to make certain spare parts available to professional repairers for at least ten years after the last unit has been placed on the market. In order to ensure the supply of spare parts even during the distribution phase, the spare parts and the procedure for ordering them must be publicly available on a freely accessible website of the manufacturer, importer or authorised representative no later than two years after the first unit has been placed on the market. In order to ensure that the spare parts to be provided can ultimately also be installed, there is also the requirement of repairability in the narrower sense upstream at the level of product design: the spare parts must be able to be replaced with commonly available tools and without permanent damage to the entire product.

Another aspect of the effectiveness of the supply of spare parts is the time required for them to become available. The impulse to have one's appliance repaired and not to buy a new one may be lost if the appliance is not available for several weeks as a result of the entire repair process, whereas a new product is delivered within 1-2 working days instead.³³ This is especially true for goods of central importance for everyday life. If new goods are available at similar costs as a repair or even cheaper and even faster, there is a lack of incentives to

³² Cf. e.g. position paper of the Round Table on Repair 2015.

³³ See also the results of the survey in the second chapter. Accordingly, only 22% of the respondents agree with the statement that they would also decide in favour of a repair if a new purchase would be quicker.

decide in favour of a repair. The aim must therefore be to create an availability of spare parts that is perceived as economical and practically effective. The fact that a repair will always take longer than the new delivery of already produced goods cannot be denied, especially in times of e-commerce and mail order. In this case, however, the repair should ideally bring not only long-term but also short-term advantages or, in any case, no acute disadvantages, so that consumers are not deterred by the waiting time during the repair. For example, manufacturers of smartphones and tablets could think about a rental business model in the after-sales sector that provides users with a replacement device for the time of repair for a small fee. Inspiration could also be drawn from the case law of the Federal Court of Justice (*Bundesgerichtshof*)³⁴ on the provision of a replacement vehicle and draw a parallel between cars and mobile devices and tablets. Local repair shops should be created or supported to avoid the rebound effects of sending appliances back and forth. This said, in the case of business models based on rental agreements, it must be taken into account, especially with regard to smartphones, that the devices used must be returned at the end of the rental period, which also raises data protection implications that need to be examined in more detail.

A problem in itself results from the large number of spare parts, including the ability to plan their use, which manufacturers have to keep in stock over a long period of time.

(b) Repairability by design

In addition, the implementing regulations contain provisions on repair-friendly design of the products. Even if spare parts are theoretically available, the technical and factual impossibility of repair may be justified in the design phase. A repair can already be prevented by the fact that defective parts cannot be replaced during the repair without irreparably damaging the substance of the device. In some cases, repair is also made impossible by the fact that components are used or connected in such a way that they can only be replaced with the appropriate special tools, some of which are not freely available on the market. Apple's Pentalob screws, for example,

which require a separate screwdriver, have become a well-known example. Therefore, one of the newly created resource efficiency requirements is that individual parts can be replaced with commonly available tools and without permanent damage to the device. However, specific tools for Apple products are now available for purchase, e.g. on Amazon, so now they too could be considered "commonly available". The Ecodesign Directive should possibly pursue a standardisation approach at this point. The risk is that manufacturers could see themselves invited to design products that cannot be repaired with typical tools (e.g. Phillips screwdrivers) and at the same time bring the corresponding, specially developed tool onto the market as their own product line, thus making it "commonly available". The requirements for the general availability of the tool are therefore too unspecific and could give rise to business models whose only beneficiaries are the manufacturers. If each manufacturer develops its own tool, not only will the repair market become confusing, but consumers and repair service providers will be strongly tied to the brand. Smartphones and tablets are also partially designed in such a way that a repair is not possible from the outset. This can be due to the bonding of components, for example. Particularly in the low-price sector of smartphones, it can often be observed that the back is glued to the device and therefore it is not possible to access the inside without forcibly removing the glue from the casing. However, from a design perspective, bonding also serves useful purposes, such as ensuring water- or dust-tightness. Blanket bans on certain practices or design decisions, unless they are aimed exclusively at preventing repair, should not be imposed by the Ecodesign Regulation. Rather, when issuing any rules, it must be examined precisely to what extent, for example, bonding is "reversible" or whether and when screws instead of adhesives are useful. In this respect, it must also be taken into account that mandatory design specifications per repair can also have "trade-offs" with regard to the other performance and quality scope of the devices.

34 BGH NJW 1985, PP. 2637, 2638.

(c) Information

Finally, manufacturers and importers have obligations with regard to the provision of certain information. The scope of the information to be provided and the procedure for making it available differ in the individual implementing regulations. As a rule, the information obligations only apply to technically competent repairers, and only in some cases also to end users. In terms of content, they mainly relate to repair and maintenance information and the provision of diagnostic tools. In some cases, professional repairers have to register with the manufacturer in order to gain access to repair information. In some cases, however, certain information must also be made freely available on the websites of manufacturers and importers or in manuals for installers and end users. In the case of refrigeration appliances with a direct sales function, this includes, for example, the obligation to provide information on ordering spare parts, the minimum period for which spare parts are available or the minimum duration of the warranty offered by the manufacturer, importer or authorised representative.

Information on the availability of spare parts and warranties are important factors in enabling consumers to make a sustainable purchasing decision.³⁵ Such information should not be “hidden” on websites or in installation manuals, but should be quickly and clearly accessible to end users. The European Commission has also recognised this and is focusing on the development of a digital product passport (see below).

(2) The planned revision of the Ecodesign Directive

A framework for sustainable product policy at EU level is to be established through measures in three broad areas: promoting sustainable product design, strengthening the position of consumers and public purchasers, and promoting the circularity of the production process. The proposed extension of the eco-design approach focuses in particular on measures for sustainable product design so that they meet the requirements of a climate-neutral and resource-efficient circular economy, reduce waste and ensure that the performance of sustainability pioneers gradually becomes the norm. The European

Commission's proposal for a Regulation aims to apply the ecodesign approach to a wide range of products and to create the possibility to set a wide range of targeted product requirements. The scope of the Ecodesign Directive is to be extended both in regard to products and new types of requirements, which fall into two categories: product-specific legislation, targeted at a specific product or group of products, and legislation regulating horizontal aspects, which can be established in particular for groups of products, making it possible due to technical similarity.

In addition, the position of users should also be strengthened through product-related information. This goal is served by the introduction of a digital product passport, which is to provide information to actors along the entire value chain and help consumers to make informed decisions. The product passport is intended to complement product manuals and labels.

(a) Ecodesign product requirements

As before, the task of setting ecodesign requirements is to fall to the European Commission (Art. 4 of the draft Ecodesign Regulation) For this purpose, it shall adopt delegated acts in accordance with Art. 66. Like the Ecodesign Directive, the Ecodesign Regulation does not in itself lay down specific requirements, but only provides the framework and the criteria with which the product-specific implementing acts must comply. The ecodesign requirements are intended to improve a number of product aspects [Art. 5 (1) Ecodesign Regulation], including durability, reusability, repairability, possibility of maintenance and overhaul as well as remanufacturing and recycling. Where appropriate, they must include performance requirements according to Art. 6 and/or information requirements according to Art. 7. In principle, the requirements are set for a specific product group, Art. 5 (1), but if two or more product groups have technical similarities, ecodesign requirements may also be set horizontally. Art. 5 (4) specifies the aspects to be taken into account by the European Commission when developing the requirements: priorities of the Union in the fields of climate, environment and energy efficiency, as well as other related priorities of the Union, relevant Union legislation, self-regulatory measures according to

35 This is also clear from the results of the survey outlined in the second chapter. Thus, the vast majority of respondents (64%) consider a repair label that contains summary information on whether and how good a repair of the appliance is possible to be important or even very important.

Art. 18 of the proposal, relevant national environmental legislation and relevant European and international standards. In addition, an impact assessment shall be carried out on the basis of the best available evidence and analysis and, where appropriate, on the basis of additional studies and research results developed in the framework of European funding programmes.

Furthermore, relevant technical information which serves as a basis for or is derived from Union legislation or instruments shall be taken into account.

With this legislation, the time-consuming approach of enacting product-group-specific regulations will thus continue to be pursued. In order to do justice to the diversity of products, especially in the ICT sector, the European Commission should therefore always examine the extent to which horizontal requirements make sense and are possible.

(b) The digital product passport

In order to provide product information for actors along the entire value chain concerning the life cycle of products, a digital product passport (DPP) is to be introduced, cf. Chapter III Ecodesign Regulation. In the sense of the environmental policy digital agenda of the German Federal Ministry for Environment, Nature Conservation and Nuclear Safety (BMUV), a digital product passport is a “data set that summarises the components, materials and chemical substances or also information on reparability, spare parts or proper disposal for a product. The data originate from all phases of the product life cycle and can be used in all these phases for various purposes (design, manufacture, use, disposal)”.³⁶ The digital product passport facilitates the exchange of information, for example on the manufacturing process, reparability, availability of spare parts or disposal, between companies, suppliers, authorities and consumers.³⁷ For example, users can quickly access digital operating instructions to avoid operating errors or to see whether it makes sense to replace a device from a material and energy efficiency point of view.³⁸ Repair shops can also avoid mistakes

by accessing the product information. The structured recording of repairs and maintenance (“full service history”) could also be integrated into the product passport in order to create incentives for the sale and purchase of used goods. With the Asset Administration Shell (AAS) and the Digital Twin, models are also available to implement the Digital Product Passport.

It is true that much product information is already publicly available, but under different conditions and in different formats. An added value of the digital product passport lies in the standardisation of data exchange³⁹ and the resulting simplified availability of product information for all parties involved. According to the European Commission’s proposal for a regulation, the digitised product information should be easily available, for example via a “one-click solution” using a QR code attached to the product itself.

(c) Product labels

Classic labels affixed to the products are intended to provide consumers with an additional source of information and to make it easier for them to decide in favour of sustainable products. They should attract attention when viewing the products on display and should therefore be clearly visible and recognisable on the products. The labels should contain information that enables consumers to compare products, e.g. by indicating performance classes.

(3) Conclusion

The extension of the scope and the measures to improve the exchange of information are important steps. Nevertheless, there remain some “blind spots” that are crucial for the effective implementation of the right to repair. This is not to be understood as a fundamental criticism of the draft Ecodesign Regulation, as the measures to be taken depend on the respective product group. However, the points outlined below are neither found in specific implementing regulations nor as general considerations in the draft Ecodesign Regulation. They should therefore be taken into account when creating codesign regulations.

³⁶ <https://www.bmu.de/faqs/umweltpolitische-digitalagenda-digitaler-produktpass>.

³⁷ University of Cambridge Institute for Sustainability Leadership (CISL) and the Wuppertal Institute. (2022). Digital Product Passport: the ticket to achieving a climate neutral and circular European economy? Cambridge, UK: CLG Europe.

³⁸ Cf. Geibler/Gnanko 2022.

³⁹ <https://www.dke.de/de/arbeitsfelder/industry/digitaler-produktpass>.

There is an essential factor for the effectiveness of the obligation to stock spare parts, which affects many product groups, which has so far not been addressed (consciously?), namely pricing.

According to ecodesign rules, manufacturers are not obliged to provide spare parts free of charge. What they can demand in return is left to their discretion. The question of performance and consideration is one of a private law nature. There, the principle of private autonomy applies, which can only be restricted under certain conditions. However, if prices for spare parts are too high, the repair is no longer worthwhile.⁴⁰ In this respect, the principle of private autonomy in pricing may compete with the achievement of the objectives pursued by the ecodesign rules. The European Commission has noted this conflict, at least to some extent: Only “reasonable and proportionate fees” may be charged for access to repair and maintenance information or the provision of regular updates, e.g. for household washing machines. In order not to lose consumer confidence in the announced creation of the right to repair by the fact that in practice spare parts are available but too expensive, the aspect of pricing should also be considered for spare parts from the outset, subject to the examination of legal admissibility. Price limits for spare parts that are determined in relation to the value of the entire product would be conceivable. However, this would require objective calculation bases at EU level. Round Table Repair Germany (*Runder Tisch Reparatur*) suggests including spare parts prices as an evaluation criterion within the framework of an EU-wide repair index.⁴¹

Another important aspect that has not yet been adequately covered by regulation is the obligation of manufacturers to provide software updates, which are of particular importance due to the relevance of the ICT sector for the sustainability goals of the Union. So far, there are only isolated regulations on the provision of software updates, e.g. in Regulation (EU) 2019/2021 on ecodesign requirements for electronic displays. Article 6 of this regulation stipulates that a software update must not lead to a deterioration in energy efficiency. In addition, firmware and security updates must be made

available for eight years after the last specimen has been placed on the market (Annex II E. 1. a) Regulation (EU) 2019/2021). An identical obligation to provide firmware and security updates is also provided for in Regulation (EU) 2019/424 laying down ecodesign requirements for servers and data storage products (Annex II No. 1.2.3 Regulation (EU) 2019/424). Concrete regulations that specify the (timely) availability of software updates at ecodesign level can not only be enforced by the authorities as product standards under public law, but, as will be shown, can also have a significant influence on civil law claims and thus have a considerable control effect with regard to sustainability. The regulations developed in the preliminary ecodesign study for mobile phones, smartphones and tablets on the obligation to update software could serve as a model (cf. below, 4.1.1. cc.).

So far, the focus has mainly been on spare parts supply and information obligations towards professional repairers and direct obligations towards end-users rarely exist. If end users also had direct access to spare parts, the potential of do-it-yourself repairs could be mobilised more easily. However, the consequences under product liability law of a repair that is not carried out professionally must then be considered.

Another practical problem has not yet been solved: spare parts have to be available within 15 working days. Added to this is the time needed for the repair. In practice, this can mean that consumers have to do without their smartphones for several weeks in order to have them repaired. A new order, however, is available within a few working days or even the next day. The question arises to what extent regulatory intervention makes sense. Rather, accompanying measures such as best practices should be considered. The European Commission could develop proposals for business models for manufacturers and importers that are suitable for serving the interests of all and the goal of sustainability. In particular, the possibility of providing replacement equipment could be considered.

40 This is also reflected in the results of the survey presented in the second chapter: Only 11% would opt for a repair even if a new purchase was possible at the same price. However, the vast majority of respondents (65%) would not be willing to do so.

41 Cf. https://runder-tisch-reparatur.de/wp-content/uploads/2015/11/Positionspapier_RunderTisch.pdf.

cc Ecodesign preparation study for smartphones and tablets

A preparatory study carried out by the Berlin Fraunhofer Institute for Reliability and Microintegration examined the necessity and feasibility of ecodesign regulations for mobile phones, smartphones and tablets.⁴² This also contains regulatory proposals in which the approaches described (obligation to supply spare parts, maximum delivery times, repairability by design, provision of instructions and information) are retained, but in addition are supplemented by requirements that have not yet been taken into account in the previous implementing regulations.

(1) Software updates

The interaction of hardware and software is an essential prerequisite for many ICT devices, and especially for smartphones and tablets, so that the devices can fulfil their function at all. This is especially true for the so-called “embedded software”, i.e. the software that is contained on the device itself and is inseparably connected to it. Such embedded software is primarily the operating system (OS). Unlike physical components, software does not wear out, but its digital environment changes continuously and in short cycles. In order to maintain the functionality and security of the software over a certain period of time, regular updates are necessary. Because of the special importance of the software for the functionality of the physical product, the fate of the overall product is often inextricably linked to the state of the (embedded) software. A lack of software updates can lead to the inoperability of the entire product and thus to its premature disposal. The following quotation from the answers to the open question presented in chapter 2 illustrates this statement once again:

“The fact that it can be repaired, or that parts such as battery etc. can be replaced is more important than a label. Devices should be thought of as durable together with their software.”

31-year-old consumer

The special importance of software and digital products for the functionality of devices has already been taken into account by the European legislator in the Digital Content Directive and the Sale of Goods Directive.⁴³ Their implementation clears a path to the updating of digital products or their parts. However, sustainability considerations have played a subordinate role in the creation of these regulations; rather, the interest in (indefinitely) maintaining contractual conformity has been in the foreground. Continuous software updates are, nonetheless, highly suitable for counteracting the premature obsolescence of ICT devices and thus contributing to sustainability. The update policies of smartphone and tablet manufacturers differ greatly. Larger providers in particular provide their devices with longer and regular updates. However, there are strong differences not only between the different brands, but also within the product groups. Tablets are provided with updates less frequently than smartphones and for a shorter period of time.

According to the regulatory proposal of the Ecodesign Preliminary Study for mobile phones, smartphones and tablets, security updates should be available for at least five years, updates of the operating system for at least three years. In the sense of a uniform concept for the promotion of sustainable product use at the European level and a harmonised consumer law, these product group-specific requirements of the Ecodesign Directive should be used to specify the update periods owed under civil law. In the course of the planned revision of the Directive on the Sale of Goods, this should be explicitly clarified in order to simplify the coexistence of private and official enforcement and to implement the ecodesign requirements in a “two-track” manner.

(2) Spare parts prices

It is also to be welcomed that the preparatory study takes up the hitherto unregulated aspect of spare parts prices. It is proposed that manufacturers of smartphones and tablets should publicly announce a gross price for certain spare parts on their website, which may not be changed after publication. It is questionable whether this measure makes economic sense. Manufacturers

⁴² Available at: <https://www.ecosmartphones.info/>.

⁴³ An overview of the innovations is provided by Weiß 2021, p. 208, and Paal/Wais 2022, p. 1164, cf. also: Mayer/Möllnitz 2021, p. 333; Firsching 2021, p. 210; Kramme 2021, p. 20.

may be inclined, to be on the safe side, to quote a higher price to buffer any cost increases in the future.

When considering further measures, especially in the area of price regulation, it must always be taken into account that the regulatory control of market prices means a deep intervention in the private autonomy of the manufacturers. However, in order for the obligation to supply spare parts to achieve the desired sustainability effect, this problem must be addressed openly. An intrusive but effective solution could be to limit prices to a “reasonable” level. The price of a spare part could be calculated in proportion to its importance for the whole product. This could include, for example, the value of the material compared to the whole product, but also, of course, the manufacturing and stocking costs as well as the cost of delivery. At the same time, it must be taken into account that the trade secrets of the manufacturer, in particular the construction plans, must be protected. In addition, no excessive demands should be made on the manufacturers (e.g. having to make a separate calculation for every spare part, no matter how small). The price of a spare part should be “reasonable”. One could think of defining reasonableness by means of a presumption rule that takes into account the costs borne by the company.⁴⁴ A separate obligation to justify prices would only exist if this value is exceeded. However, manufacturers should not be obliged to publicly disclose business secrets and internal calculation bases. The monitoring of pricing policy should be the task of the market surveillance authorities. They can determine the scope of the investigations themselves within the scope of their procedural discretion. In order to create incentives for compliance with the price specifications, the most intervention-intensive measure could be to consider skimming off the profits earned due to excessive price calculations. If necessary, these profits should be estimated. A similar possibility is known from cartel law, where Section 34 (1) of the German Competition Act (*Gesetz gegen Wettbewerbsbeschränkungen*, GWB) provides for the possibility of skimming off economic advantages in the case of cartel violations, the amount of which can be estimated, Section 34 (4) GWB.

However, due to the high legal hurdles, this hardly played a role in the practice of the Federal Cartel Office (*Bundeskartellamt*, BKartA).⁴⁵ However, the Federal Minister of Economics, Robert Habeck, has announced that Section 34 GWB would be revised as part of the tightening of competition law and that the hurdles for a skimming off of profits under cartel law will be lowered.

In order to be able to justify such an approach, however, a high degree of legal certainty must be created so that manufacturers are not exposed to incalculable risks of official sanctions. Price and product tables drawn up by standards associations could help here.⁴⁶

(3) Bundling of spare parts

The Ecodesign preparatory study on mobile phones, smartphones and tablets provides for at least batteries to be made available to end-users and at least displays and chargers to be made available to end-users and repairers. End-users seem to be somewhat more in focus, which would allow DIY repairs. However, consideration should be given to expanding the range of spare parts that must be made available “at least”. In some cases, smaller spare parts in particular are not sold separately by manufacturers, but only as part of a larger component. This forces repair companies and end users to replace the entire component, which increases the cost of repair accordingly. The following statement, given in response to the open question presented in Chapter 2, illustrates this aspect once again:

“Unfortunately, you can't repair so many things nowadays because they are mostly made of disposable components; or if you have a small thing you have to directly replace a big part because that small part doesn't exist individually.”
63-year-old consumer

(4) Preparation for reuse

In addition, it must be possible to easily and reliably reset smartphones and tablets to factory settings and automatically delete contacts, messages and call lists to make the device fit for reuse.

⁴⁴ It would be conceivable to orientate oneself on the below cost price regulation of competition law, Section 20 (3) and (4) of the German Competition Act (*Gesetz gegen Wettbewerbsbeschränkungen* – GWB), cf: Markert, in: Immenga/ Mestmäcker 2020, Section 20 GWB marginal no. 92 ff.

⁴⁵ Bischke/Brack 2022, p. 899, 901.

⁴⁶ As, for example, in the Netherlands by the “UNETO-VIN Tabel”, available at: <https://www.techniknederland.nl/cms/streambin.aspx?documentid=55615>.

4.1.2 Enforcement level: Market surveillance

Ecodesign rules can only have a (sustainable) effect if they are followed and, if necessary, enforced. This is the responsibility of the market surveillance authorities of the Member States, whose tasks and powers are in Germany determined by the Energy-related Products Act (*Energieverbrauchsrelevante-Produkte-Gesetz, EVPG*), which was enacted in implementation of the Ecodesign Directive. For example, in the event of non-compliance with the ecodesign requirements, the competent authority may temporarily prohibit the placing on the market, putting into service or making available of the product pursuant to Section 7 (3) No. 5 EVPG. The laws are implemented by the federal states as a matter of their own (Art. 83 GG), so that market surveillance is the responsibility of the state authorities. The Laender appoint the market surveillance authorities and provide them with the necessary resources (in particular qualified personnel and material resources). The fact that the assignment of responsibility for enforcement is left to the respective federal states results in an uneven picture: In some cases the task of market surveillance is assigned to the trade supervisory authority (Bavaria, Bremen and Lower Saxony), to the state offices for labour, consumer or environmental protection (Berlin, Brandenburg, North Rhine-Westphalia or the occupational health and safety department in the Saxony state directorate) or, as in Saxony-Anhalt, to the state calibration office. The resources made available also differ considerably.

It is worth investigating how state authorities are equipped, what their workload is and what they (could) actually do to monitor the provisions of the Ecodesign Directive.

Ecodesign regulations do not give end users a direct claim against manufacturers and importers for compliance with the ecodesign requirements, rendering them dependent on the authorities to enforce the regulations. The path of private legal action thus remains

blocked. It is true that public enforcement can offer some advantages over private enforcement, especially with regard to the infrastructural prerequisites and investigation possibilities and the associated balancing of information asymmetries.⁴⁷ However, it cannot be taken for granted that an authority will actually use the possibilities and powers (theoretically) available to it. The personnel possibilities and financial means as well as the possibly necessary expertise must be available. Finally, intra-authority decision-making processes can also affect effective enforcement. Authorities do not always choose the path of optimal law enforcement, at times choosing to act in self-interest instead (“capture effect”).⁴⁸ According to estimates made by the European Commission in 2019, 10-25% of products sold on the market will not comply with ecodesign and energy labelling requirements and more should be done to monitor the market.⁴⁹ With the planned extension of the Ecodesign Directive, the number of implementing regulations is expected to grow considerably. Whether a higher level of consumer protection will be achieved with an increasing number of product groups to be monitored by market surveillance remains to be seen, but may not be taken for granted against the background of the already patchy market surveillance.

The need for increased market surveillance and stricter enforcement measures is also recognised by the European Commission. Effective enforcement of the ecodesign requirements is crucial to ensure that the expected benefits of the Ecodesign Regulation and its expected contribution to achieving the Union’s climate, energy and circular economy goals are achieved. A comprehensive control, however, is apparently not considered realistic, since it is only a matter of preventing “problematic levels” of non-compliance of products with the ecodesign requirements. The European Commission seems to see its function to a large extent as a supervisory body. It is true that specific regulations are to supplement the provisions of the Market Surveillance Regulation (EU) 2019/2020 in order to further strengthen the planning, coordination and

47 Weber/Faure 2015, p. 533; Purnhagen 2021, pp. 155, 159.

48 Weber/Faure 2015, p. 540 f.

49 European Commission, The new energy efficiency labels, Factsheet v. 11.3.2019, available at: https://ec.europa.eu/commission/pres-scorner/detail/en/MEMO_19_1596; Ecodesign Work Programme 2016-2019, COM(2016) 773 final, p. 11. Cf. in addition the Report of the European Parliament on the implementation of the Ecodesign Directive v. 7.5.2018, available at: https://www.europarl.europa.eu/doceo/document/A-8-2018-0165_EN.html?redirect and the Special Report No. 01/2020 of the European Court of Auditors, available at: https://www.eca.europa.eu/Lists/ECADocuments/SR20_01/SR_Ecodesign_and_energy_labels_EN.pdf.

support of the efforts of the Member States. However, the European Commission is to be given “additional instruments” to ensure that the market surveillance authorities take sufficient measures. In particular, it is to be empowered to set a minimum number of inspections.

The responsibility for successful market surveillance lies with the Member States. In the European Commission’s view, they should draw up a specific action plan identifying the products or requirements considered to be of particular importance and the activities planned. However, support for Member States is also envisaged, namely through the organisation and, where appropriate, financing of joint market surveillance and testing projects, joint investment in market surveillance capacities and joint training for the staff of market surveillance authorities.

In order to ensure effective enforcement of ecodesign requirements throughout the Union, the European Commission should focus more on the implementation of support measures in light of the problems outlined above. An extension of the powers of intervention and action plans have only limited effect if the power and ability to implement them are lacking. In the widely respected *Janecek* judgement,⁵⁰ the ECJ de facto obliged the city of Munich, following a complaint by a resident, to draw up an action plan to reduce emissions from road traffic to the limit set by the EU. This case law could possibly be used to force market surveillance authorities to implement a generally accepted action plan for making ecodesign a reality.

To ensure that the enforcement of ecodesign requirements is not limited to product groups prioritised by the authorities, but can be carried out as comprehensively as possible, it must be supplemented and flanked by private legal enforcement. This makes it all the more important to link the Ecodesign Directive and the Sale of Goods Directive. The European Commission proposal to amend the Ecodesign Directive does not contain any indications in this regard. In any case, a corresponding link should be explicitly established (retrospectively) in the planned revision of the Sale of Goods Directive.

4.2 Individual enforcement (civil law)

Using civil law tools for the achievement of sustainability goals is discussed again and again. Although environmental law is classically a matter of public law, civil law can in principle also have a decisive steering effect. This also applies to the implementation of the right to repair. However, it cannot be denied that the lack of consideration of sustainability aspects in both the Consumer Sales Directive and the Sale of Goods Directive has led to a situation where the interest in sustainable product use is hardly reflected in the legal rules. Taking previous research into account, it will be demonstrated that the law on the sale of goods nevertheless offers fertile ground for the promotion of sustainable habits of use and, in particular, for the right to repair. As will be shown, it does not require a complete overturn to make the law on the sale of consumer goods “fit” for the right to repair. What is needed, however, is a (re)alignment of a few screws and the interlocking of civil law regulations with the ecodesign product standards.

Civil law is directed towards reconciliation of interests. By means of asserting claims, individual interests can be pursued and satisfied under certain (factual) conditions. According to Section 194 (1) of the German Civil Code (*Bürgerliches Gesetzbuch, BGB*), a claim is the “right” to demand that another person does or refrains from doing something. When talking about a right to repair, it must be taken into account that the interest of the consumer is not limited to the repair process as such, but can also include, for example, pre-contractual information about product characteristics, especially about the availability of spare parts and the repairability of the product. However, if a “right” to repair (in the narrower sense) is involved, the question arises as to who can be required to carry out a repair and under what conditions. In EN 45554:2020, the term repair is defined as follows: “3.1.4 Repair: Process in which by which a defective product is restored to a condition in which it can fulfil its intended use”. A claim to the performance of a repair can arise in various

50 ECJ, Judgment of 25. 7. 2008 - C-237/07.

situations: for example, on the basis of a contract for work and services (Section 631 BGB), in which the repair is performed as an owed result in return for payment, or in the context of a rental agreement, in which the landlord owes the repair of the rental object [Section 535 (1) sentence 2 BGB]. By far the most common form of consumption, however, is purchase. The study therefore examines the extent to which the rules of consumer sales law offer starting points for the promotion of sustainable product use.

4.2.1 Warranty for defects under the law of sale

A claim for repair does not initially arise from the sales contract itself, because this initially aims at the exchange of a purchased item free of material and legal defects against payment of the purchase price, Section 433 BGB. In the event of a defect in the object of sale, Section 437 BGB stipulates certain rights of the buyer: He may demand a supplementary performance, withdraw from the contract or reduce the purchase price and demand compensation for damages or expenses. The primary remedy is the supplementary performance regulated in Section 439 BGB, in the context of which the buyer can demand either the delivery of an item free of defects or the rectification of the defective item itself (in particular by its repair). In the following, the law on warranty for defects is examined for starting points that enable a steering effect towards a sustainable law on the sale of consumer goods. In particular, it is to be worked out to what extent the variant of subsequent fulfilment inherent in supplementary performance can be effectively used to achieve sustainability goals. To this end, it will first be explained that sustainability standards are part of the legitimate expectations of the buyer and that their non-compliance constitutes a material defect. Subsequently, it will be discussed which options exist on the legal consequences side to promote repair. In this context, the problem of limitation periods is also addressed and possible solutions discussed. Finally, the new software update obligations introduced into the German Civil Code on 1 January 2022, which have particular potential from a sustainability point of view, deserve separate consideration.

aa Objective concept of defect

The door to a repair obligation under the purchase contract is the disappointed expectation of the buyer of the seller's performance: Against payment of the purchase price, the buyer may expect to receive an item which, with regard to its quality and possible use, corresponds both to what the parties have agreed (subjective requirements) and to what can usually be expected (objective requirements). Furthermore, the item must meet the assembly requirements, Section 434 (1) BGB. The decisive parameters for freedom from defects are the possibility of use and the quality. The buyer's expectation is above all to receive "good goods for good money" and thus in particular a functional item. However, if the parties explicitly agree, for example, that a smartphone should be repairable, this becomes part of the agreed quality, Section 434 (2) BGB, and thus of freedom from material defects. Active agreements on compliance with sustainability standards are therefore rare. In order for the transformation of consumer law in the direction of sustainability to succeed, the consideration of environmental standards in the civil law balance of interests must become a matter of course. The most important gateway for the inclusion of sustainability standards in consumer sales law are objective requirements of conformity. This does not refer to any agreement between the parties, but to what is customary and can therefore legitimately be expected.

However, the question arises as to what extent standards that the parties have not explicitly agreed to comply with, in the context of the sales contract, can influence the legitimate expectations and thus the freedom from defects of the purchased item – or more precisely, whether the buyer can expect that the purchased item complies with public or private standards that apply to it. The legal situation is relatively clear if a product does not meet public-law requirements that are a prerequisite for its use. If, for example, a sold motor vehicle does not meet public law requirements without which it is not allowed to be put into operation, the vehicle is not suitable for normal use for participation in road traffic. The situation is different, however, if products are manufactured according to standardised but not legally binding regulations.

Paradigmatic for the importance of sector-specific law in determining legitimate expectations are the provisions of the German Product Safety Act (*Produktsicherheitsgesetz, ProdSG*), which are the benchmark for the safety that can be legitimately expected. Recital 32 of the Sale of Goods Directive refers to product-specific legal provisions for the determination of product requirements and thus – even if not explicitly – to the Ecodesign Directive. The intention of the European legislator is therefore to be interpreted to the effect that ecodesign standards are in principle decisive for the justified expectation in the context of the purchase contract.

The Vienna Sales Convention, or CISG for short, seems to play a pioneering role. Art. 8 (3) CISG makes it clear that all relevant circumstances are to be taken into account in the interpretation of the contract. An international working group has compiled information from rulings of various courts with the aim of explaining the significance of voluntary technical standards in the assessment of the defectiveness of products.⁵¹ Here it is consistently shown that the existence of such standards is taken into account in the assessment of defectiveness.

Example 1

The buyer is looking for a smartphone with replaceable parts and at least five years of update support. The seller recommends the “FairPhone” to the buyer, which meets these requirements, and the purchase contract is concluded. Here, the buyer can expect, due to the explicit agreement, that individual parts can be exchanged and that the device will receive five years of updates.

Example 2

Aesthetic and functional aspects play a primary role in the purchase decision; the interchangeability of individual parts is not discussed. The battery of the smartphone is installed in such a way that it cannot be replaced. However, there is an Ecodesign Implementing Regulation that stipulates that the battery of all smartphones must be replaceable. Can the buyer expect that the smartphone he buys complies with these requirements?

However, there is no presumption that non-compliance indicates a defect. A parallel compilation of rulings by Member State courts in the context of EU law does not yet exist. It is not the task of the contract of sale to enforce such standards against the will of the parties.⁵² However, standards can influence the legitimate expectations and the suitability for normal use.

This is all the more true in a consumer society where products are created in standardised production processes. When buying a mobile phone or a tablet, the brand may play a role. Once this decision has been made, it is only a matter of choosing the desired, again standardised model. Individual negotiations between the parties about the characteristics of the product do not take place.

In the Sale of Goods Directive, the EU legislator has taken this tendency towards objectivity into account for the first time. Article 7 of the Sale of Goods Directive **Objective requirements for conformity states:** (1) *In addition to complying with the subjective requirements for conformity, the goods or digital content or digital services must 1 a) be fit for the purposes for which digital content or digital services of the same kind are normally used, taking into account, where applicable, applicable Union and national law, technical standards or, in the absence of such technical standards, applicable sectoral codes of conduct.* In German law, the decisive passage on technical standards was not included in the text of the law, but moved to the explanatory memorandum.⁵³ Under EU law, this is unlikely to be compatible with the requirements for proper implementation. Precedents are well known. In the authors' view, Article 7 of the revised Sale of Goods

51 CISG-AC Opinion No. 19, p. 4.

52 CISG-AC Opinion No. 19, p. 4.

53 BT-Drs. 19/27424, p. 24.

Directive paves the way for making the standards to be determined according to the Ecodesign Directive usable for determining freedom from defects.

Whether public or private standards are included in a specific case depends on a number of factors and the context of the contract.⁵⁴ For example, a standard can become a component of freedom from defects if the seller has explicitly pointed out this standard to the buyer beforehand or has publicly stated that he wants to comply with the standard. If, for example, the seller has pointed out the ecodesign requirements in advance or has declared their intention to comply with them, this is one of the requirements for freedom from defects.

Example 3

A manufacturer publicly advertises that its smartphones meet ecodesign standards.

If there is no explicit commitment to compliance, the decisive factor is, among other things, the level of awareness of the standard and its discoverability. If it is a prominent standard whose requirements can be easily found and viewed, this may indicate that it must be complied with.⁵⁵

At the same time, the eco-design rules cannot serve as a simple "blueprint" for the seller's programme of obligations. A link between the Ecodesign Directive and the Sale of Goods Directive to promote repairs cannot be made in such a way that the sustainability goals of ecodesign are simply imposed on the purchase contract. Rather, it is important to use sustainable product standards in a system-compatible way to fulfil justified expectations. Here, above all, the expectation of the usual "quality" comes into focus, Section 434 (3) BGB. The usual condition includes the quantity, quality and other characteristics of the item, including its durability, functionality, compatibility and safety. At first glance, the criterion of "durability" [Section 434 (3) BGB] seems to be an approach to promote more sustainable consumer habits explicitly included in

the wording of the law. However, it has already been shown in the literature that the durability requirement has more of a symbolic character⁵⁶ than that it would result in a change to the previous legal situation⁵⁷: The term "durability" only refers to the *ability of the goods* at the time of the transfer of risk, i.e. at the time of the handover of the purchased item, to retain their required functions and performance under normal use. It is still not necessary that it actually does so.⁵⁸ Moreover, there is no independent criterion of "repairability". However, the repairability of the object of sale can still be assigned to the quality of the object of sale. What exactly the term "quality" means has still not been conclusively clarified. Federal Court of Justice (BGH) adopted a very broad definition in 2016:

"The quality of an object within the meaning of Section 434 (1) BGB (are) to be regarded as all factors inherent in the object itself as well as all relations of the object to the environment which, according to the perception of the market, have an influence on the value of the object".⁵⁹ This also includes the repairability of the object of sale in two senses: Repairability by design and availability of spare parts.⁶⁰ The ability to be repaired is a factor inherent in the thing itself. The lack of availability of spare parts in turn results in non-repairability. With regard to the provision of spare parts, however, disillusionment arises in several respects: even if the availability of spare parts is regarded as a criterion for freedom from defects, this would only have to be given at the time of the transfer of risk and not over a longer period of time, as provided for by the Ecodesign Directive. Theoretically, it would be sufficient if the availability of spare parts was only ensured at the time of the transfer of risk and not a second later. In addition, a corresponding claim for subsequent performance might not be enforceable, as it is directed against the seller, who, however, usually has no influence on the availability of spare parts on the market. If the manufacturer refuses to provide spare parts, the seller is liable for subjective impossibility according to the law. The consumer would then be advised that there is an

54 CISG-AC Opinion No. 19, p. 9.

55 CISG-AC Opinion No. 19, p. 15 f.

56 Croon-Gestefeld 2022, pp. 497, 499.

57 Bach/Wöbbeking 2020, pp. 2672, 2674.

58 Bach/Wöbbeking 2020, pp. 2672, 2674.

59 BGH NJW 2016, P. 2874.

60 Croon-Gestefeld 2022, p. 497, 501.

eco-design ordinance for the respective product group which provides for a replacement parts obligation on the part of the manufacturer. Ultimately, the consumer would then be dependent on the fact that there is an eco-design ordinance for the respective product group that provides for a replacement parts obligation on the part of the manufacturer, and that this is then also officially enforced.

According to Section 434 (3) no. 4 BGB, the objective requirements include that the item is handed over with the accessories including the packaging, the assembly or installation instructions as well as other instructions which the buyer can expect to receive. Here, too, the reference to the ecodesign rules is suitable for filling out the objective requirements. If these provide for the provision of repair instructions or instructions for use for resource-saving use, this can also be expected in the context of the purchase contract.⁶¹

bb Repair as a remedy

(1) Problem description: Freedom of Choice

If the seller succeeds in delivering the object of sale, but it is not free of material defects or defects of title (Sections 434, 435 BGB) at the time of delivery, the buyer must or may request the seller to remedy the defect in accordance with Section 439 (1) BGB before he can withdraw from the contract or claim damages. This serves the interests of both parties to the contract: The seller gets the possibility of a “second tender” and the chance to earn the full purchase price after all. He also avoids having to take back the formerly new item and sell it as second-hand goods at a significant discount.⁶² The buyer, on the other hand, has a fundamental interest in the *specific performance*⁶³ and would like to receive the specific item. How specifically the seller can use his second chance has been in the hands of the buyer since the Consumer Sales Directive 1999: “At his option” he can demand – if available – delivery of a completely new, this time defect-free item or removal of the defect – i.e. repair – of the item already delivered,

Section 439 (1) BGB. In terms of sustainability, repair is generally preferable to replacement and recycling (for the special aspect of refurbishment see (3)). In the recycling process, the goods go through a second production phase in which energy and resources are consumed in order to return the product to a usable state. The current law does not offer the consumer any incentives to decide against a subsequent delivery and in favour of a repair. A repair usually takes much longer than the shipment of a new product. From the consumer’s economic perspective, this is already an inherent disadvantage.⁶⁴ Even if the buyer chooses the repair option within the scope of his freedom of choice, the seller always has the option of rejecting it with reference to the (relatively) disproportionate costs compared to the subsequent delivery, section 439 (4) BGB.

(2) Repair as a primary remedy

In order to strengthen the remedy of repair in the context of supplementary performance under sales law, it could therefore be an option to deprive the buyer of his right to choose and to anchor repair as the primary remedy.⁶⁵ Subsequent delivery would only be an option if repair would involve disproportionate effort. This could lead to significantly more “still salvageable” smartphones and tablets remaining in circulation instead of being disposed of. What sounds promising in theory has yet to be proven in practice. Since, except in direct manufacturer sales, the seller is not the manufacturer at the same time, he often lacks the infrastructures and resources necessary for repair. In concrete terms, this means that sellers often have to resort to external repair companies to fulfil the repair obligation. The resulting costs can be significantly higher than the costs for supplying a new device that is already in stock. In many cases, the seller can then invoke the disproportionate nature of the chosen method of subsequent fulfilment, Section 439 (4) BGB. In addition, dealers would have to create structures to

61 Also Brönneke/Schmitt/Willburger in Brönneke/Föhlich Tonner 2022 § 4 Rn 32.

62 Cf. BT-Drs. 14/6040, p. 221.

63 Lorenz 2006, p. 1175.

64 See also the results of the survey presented in the second chapter: According to this, only 22% of the respondents agree with the statement that they would also decide in favour of a repair if a new purchase would be quicker. The majority of respondents disagreed with this statement: 44% of respondents would decide to buy a new item if it could be done faster than a repair.

65 See Schlacke/Stadermann/Grunow, Rechtliche Instrumente zur Förderung des nachhaltigen Konsums – am Beispiel von Produkten, UBA Texte 24/2012, p. 27.

avoid “repair backlogs”. However, this would mean a considerable infrastructural and financial effort.

The problem is not that a claim for repair would not exist within the framework of the warranty under sales law – but that there is a more attractive alternative. Consumers and entrepreneurs could find themselves invited by a legally enforced repair to make a deviating agreement and instead agree on the shipment of new goods – which in the end is preferable to both in case of doubt. Put bluntly, there is not much to be gained in practice by creating an overriding legal consequence in which, in case of doubt, there is no interest. Therefore, it is not only a matter of creating incentives so that consumers decide in favour of repair; rather, it is a matter of naming the inherent disadvantages of repair as such and developing counter-strategies in order to be able to exploit the sustainability potential of the repair claim.

(3) Subsequent delivery of “refurbished” products instead of new goods

In recent years, more and more companies have been selling “refurbished” goods at favourable prices, especially in the smartphone market. Refurbishment means the quality-assured overhaul and repair of products for the purpose of reuse. “Old” devices are taken in part-exchange and refurbished for resale. The promise is to receive a fully functional device – at a favourable price. Only the external appearance may differ from that of brand-new goods, especially due to traces of use, but this is reflected in a corresponding price reduction. If a decision is not made in favour of repair or if this is not possible, the replacement delivery of a “refurbished” product could contribute to the promotion of circular economy. However, apart from possible acceptance problems, there are weighty legal considerations that stand in the way: The purpose of refurbishment is to (subsequently) satisfy the buyer’s interest in equivalence. If a new item is owed, a new item must be delivered to remedy the defect. The Munich Regional Court⁶⁶ rejected the possibility of subsequent delivery of a refurbished appliance on the grounds that appliances would no longer come close to the market value of a new appliance after two years of use in this case, despite reconditioning. It was not sufficient that

a reconditioned device was fully functional, because it was important that the subsequently delivered item corresponded completely to the originally owed item in the sense of a generic debt. From a legal point of view, a used appliance does not become a new item if it has been refurbished by the manufacturer. So far, this is the decision of a lower court. The Federal Court of Justice has not yet had the opportunity to comment on this problem.

In addition, against the background of the proposed link between ecodesign and the Sale of Goods Directive, it must be taken into account that a public-law obligation on the part of the manufacturer to provide updates for a “refurbished” appliance may no longer exist because it was placed on the market a long time ago. Originally, a device could have been purchased for which there is an update obligation of several years according to the ecodesign rules, but in the context of the subsequent performance, a device could be delivered for which such an obligation no longer exists. Even if the buyer has a contractual claim against the seller for updates, its enforcement is jeopardised because the seller usually does not develop the updates himself but obtains them from the manufacturer. A subsequent delivery of “refurbished” devices would therefore put the buyer in a worse position in several respects.

When assessing whether a right to repair should take precedence over a replacement delivery with a new device, it must also be taken into account whether the device taken back will be reintroduced to the market as a refurbished product.

(4) Replacement unit for the duration of the repair

A major disadvantage of repair is the lack of availability of the product during the repair period. The following two quotes from the answers to the open question presented in the second chapter illustrate this once again:

“My smartphone is my daily companion. Therefore, a replacement during the repair would be very convenient so that I don’t have to reorganise myself.”
24-year-old consumer

“In the case of a repair, I could do without a new purchase, but in the case of a smartphone, for example, I would have to (be provided with) a replacement device for the duration of the repair”⁶⁷
63-year-old consumer

This could be counteracted by the obligation to provide a replacement device. Such an obligation can be assumed unproblematically within the framework of a transfer of use agreement (e.g. rental, leasing). However, the seller's obligation of subsequent performance is unsuitable for this purpose: The supplementary performance merely aims at the subsequent creation of the contractual condition, namely the elimination of the defect and grants the seller a “second chance”. However, it is not intended to create a hypothetical condition that would have existed if the performance had been proper from the beginning. It is true that Section 439 (2) BGB provides for the seller's obligation to bear the costs. However, this only includes the costs necessary for the purpose of subsequent performance. For the repair itself, however, it is not necessary that the buyer receives a replacement device.

Meanwhile, in the motor vehicle sector, it is recognised that the injured party in an accident can demand compensation for the necessary (Section 249 (2) sentence 1 BGB) rental car costs incurred during the unavailability of his car due to the accident. These principles are also to be applied in the case of damage to other property, irrespective of whether the property is used privately or commercially. It is possible that this idea could be applied to smartphones and tablets with a claim for damages according to Sections 437 No. 3, 280 ff. BGB, which arises from the handover of a defective object of purchase. The damage lies in the unavailability of the purchased device or in the necessary costs of renting a replacement device for the duration of the repair. The seller could also provide the replacement appliance himself within the scope of a claim for damages, Section 249 (1) BGB. However, such a claim is fraught with uncertainties: It must be taken into account that a claim for damages presupposes fault on the part of the seller. The seller is presumed to be liable under Section 280 (1)

sentence 2 BGB. However, if the seller succeeds in proving that the defect is not due to his fault but to a defect in manufacture, he is not liable. Since the seller cannot prove the fault of the manufacturer according to Section 278 BGB, a claim for damages would all too often be empty. The mere assertion of a lack of fault on the part of the seller, who is usually acting on a commercial basis, is likely to deter many consumers from pursuing their claims. A solution should be found already to include the provision of a replacement device in the parties' agreement. Contractual models could be created that provide for the uncomplicated provision of a replacement appliance in the event of a repair. This could be done, for example, via an “insurance solution” in which the consumer pays a surcharge.

cc Limitation

Regardless of how a repair claim is structured via the warranty for defects law, the statute of limitations plays a decisive role: Art. 10 (1) of the Sale of Goods Directive provides for a liability period of only two years from delivery. Pursuant to Section 438 (1) No. 2 BGB, the buyer's warranty claims become statute-barred after two years from delivery of the object of sale. The rules of the statute of limitations de facto establish a maximum durability period⁶⁸, which means that warranty law cannot make a serious contribution to the goal of sustainable product use: If the purchased item has too short a lifespan or cannot be repaired, this often only becomes apparent after two years have elapsed. At this point, however, the buyer's claim can no longer be enforced. The problem is exacerbated by the fact that the reversal of the burden of proof regulated in Section 477 BGB only applies for one year. From the second year after the purchase onwards, it is up to the buyer to prove the existence of a defect at the time of handover. Even if, for example, a due indication of a minimum durability would fall under what is considered as absence of defects, a violation after the expiry of the warranty period would have no consequences. In addition, the buyer would have the burden of proof already in the second year after the handover.

⁶⁷ In the original response, instead of the phrase “a replacement device”, the phrase “get a replacement (device)” was used. This has been corrected here for better readability.

⁶⁸ Bach/Wöbbecking 2020, pp. 2672, 2675.

(1) Extension of the limitation periods and reversal of the burden of proof

An obvious solution could therefore be to extend the warranty period together with an extension of the reversal of the burden of proof.⁶⁹ Art. 10 (3) of the Sale of Goods Directive allows the Member States to introduce longer periods. However, such considerations face the objection that the limitation of the warranty period has an important function in the market. Unlimited or excessively long warranty periods lead to price increases which customers in certain segments, especially for “disposable” products in the low-price segment, do not accept and may therefore prefer to do without them altogether.⁷⁰ The lack of demand ultimately leads to certain products no longer being offered at all. Excessively long warranty periods could therefore cause economic harm.⁷¹ However, several countries have significantly longer warranty periods (e.g. Ireland six years, Sweden even ten years). The European Commission is also considering extending the limitation periods.

The Federation of German Consumer Organisations (vzbv) was able to prove in a study that there were no systematic price increases in the Member States that have provided for a longer warranty period than two years in implementation of the Consumer Sales Directive.⁷² The argument that defects typically appear shortly after handover, at any rate within the two-year limitation period, so that the occurrence of defects after this period is the exception, cannot be accepted in this context either. Apart from the fact that it is doubtful whether defects do not now regularly appear later, at least in some product groups, such a justification would possibly promote practices of planned obsolescence.

However, a blanket extension of the warranty period seems too undifferentiated and a distinction between short- and long-lived products must be made. The liability period could therefore – as in Finland or the

Netherlands – be determined specifically according to the respective product. In Norway there is an explicit differentiation between long-lived and short-lived goods⁷³. The product group-specific regulations of the Ecodesign Directive lend themselves to such an approach. If an ecodesign implementing regulation provides for a certain service life or an obligation to stock spare parts, this period should be decisive for the limitation period. In this way, the Ecodesign Directive and the relevant implementing regulations would be given greater force.⁷⁴ In addition, a suspension of the expiry could be considered, so that the consumer still has time to assert his rights after the expiry of the liability period.⁷⁵

The German Federal Government has also announced an extension of the warranty periods in the coalition agreement, but wants to orientate the warranty period to the respective service life determined by the manufacturer.⁷⁶

Ultimately, a sustainable sales law can only come into being if the problem of limitation periods is solved. If aspects such as durability and reproducibility or even the durability explicitly included in the text of the law are to play a serious role for the law on warranty for defects, this must not be counteracted by excessively short limitation periods. A *one-size-fits-all approach* in the sense of a blanket extension of the warranty period also does not lead to the goal. A product group-specific approach is preferable, be it by reference to eco-design rules or with the help of manufacturers' specifications. This Policy Brief advocates a solution based on the standardisation approach of the Ecodesign Directive. It is conceivable that manufacturers could compete for customers' favor by specifying the longest possible lifespans, which would ultimately lead to more sustainable products being launched on the market.

69 Cf: Tonner/Gawel/Schlacke/Alt/Bretschneider 2017, p. 3,6; Kieninger 2020, p. 264, 277.

70 Tonner/Gawel/Schlacke/Alt/Bretschneider 2017, p. 3, 8.

71 Tonner/Gawel/Schlacke/Alt/Bretschneider 2017, p. 3, 8.

72 Bizer/Führ/Proeger 2016, p. 39.

73 Cf: Heselhaus, 2019, Rechtsvergleich bestehender rechtlicher Maßnahmen in der Europäischen Union und ausgewählten Staaten sowie der Schweiz zur Förderung der Kreislaufwirtschaft im Konsumbereich, p. 88 f.

74 Further development of strategies against obsolescence including legal instruments, UBA Texte 115/2020, p. 240 f.

75 Bach/Wöbbeking 2020, pp. 2672, 2676.

76 Coalition agreement between SPD, Bündnis 90/Die Grünen and FDP 2021, p. 112.

On the other hand, there is also the danger that manufacturers compensate for short lifespans with other incentives such as price reductions or quantity discounts, thus creating business models that are detrimental to sustainability. If one chooses the approach preferred by the Federal Government of making warranty periods dependent on manufacturer specifications, one should not follow the French model of the *Code de la Consommation*, which also allows a “zero-warranty period”. Instead, eco-design rules should set a minimum standard to ensure that longer product use cycles are achieved. However, manufacturers should be free to go beyond this minimum standard.

(2) Limitation periods for used products

In order to support the market for used and refurbished appliances, limitation regulations should also be considered here. At the moment Section 476 (2) sentence 1 BGB provides for a reduction of the limitation period to one year for second-hand goods. In view of the already higher risk of defects in second-hand goods, this provision does not provide an incentive to buy second-hand goods. The same rules as for new goods should apply.

dd Update obligations

As part of its digital strategy, the EU has taken the increasing digital of economic life into account in the creation of the Digital Content Directive and the Sale of Goods Directive. As a result, since 01.01.2022 there are now for the first time provisions in the German Civil Code (BGB) that specifically address contracts for digital products. Special provisions for so-called “goods with digital elements” were inserted into consumer sales law. This takes into account the fact that physical goods are increasingly connected with software and that the software is often not just an “accessory” but essential or elementary for the functioning of the goods.

Under these provisions, a component constitutes a digital element if the given item cannot fulfil its functions without the digital component. The most important new provision concerns an aspect that is particularly relevant from a sustainability point of view:

the obligation to provide continuous software updates. Systematically, the continuous update provision is assigned to the absence of defects, i.e. a defect arises if the required updates are not provided. The Sale of Goods Directive breaks with the traditional principle of the law of sales that only defects already existing at the time of the transfer of risk are relevant. As a result, the contract of sale undergoes a change of type in the direction of a continuing obligation.⁷⁷ From the point of view of sustainability, however, this regulation offers great potential, even if hardly any thought was given to it when the Sale of Goods Directive was created.

First of all, it must be emphasised that the time-period-related obligation to provide an update means that the seller must not only deliver the goods with digital elements free of defects once, but must also maintain them in this condition. Ultimately, he must “maintain” the digital elements, which has a positive effect on the life of the physical item due to the elementary link between hardware and software. In addition, the assignment of the obligation to update to conformity with the contract or freedom from defects opens up the intended link between the Sale of Goods Directive and the Ecodesign Directive. Since there will often be a lack of individual agreements on the updating period [Section 475b (3) No. 2 BGB], the objective conformity with the contract is decisive: According to Section 475b (4) No. 2 BGB, the consumer must be provided with updates that are necessary to maintain the conformity of the goods with the contract during the period that he can expect in the context of the nature and purpose of the goods and their digital elements, and taking into account the circumstances and the nature of the contract. According to the explanatory memorandum to the law, the regulatory technique explicitly follows the already known standard of legitimate expectation, so that the considerations made above on the orientation towards product-specific standards can be applied accordingly:

If ecodesign implementation regulations provide for an update obligation for a certain product group for a certain period of time, the buyer’s legitimate expectation is based on this according to Section 475b (4) No. 2 BGB. In this way, the ecodesign rules can be enforced through

77 Tonner 2019, p. 363; Riehm/Abold 2018, pp. 82, 87.

civil law.⁷⁸ The orientation towards uniformly prescribed (product) standards increases legal certainty for buyers and sellers.

The obligation to update offers particular potential because the law provides for a suspension of the statute of limitations for claims for breach of the obligation to update: According to Section 475e (2) BGB claims do not become time-barred before the expiry of twelve months after the relevant update period. This is necessary because the limitation period is regularly linked to the delivery of the goods, but the obligation to update may still exist years later. Otherwise, claims for updating would already be time-barred before they come into effect. As a result, the update claims do not become time-barred before twelve months after the date of the existence of the updating obligation. This special dynamic enables buyers to individually enforce the ecodesign standards with regard to updates.

4.2.2 Manufacturer's liability

As a rule, consumers' warranty claims are not directed against the manufacturer, since no contract is concluded with the manufacturer except in the case of direct sales by manufacturers. However, it is the manufacturer who can most effectively ensure the supply of spare parts or software updates. In the context of the warranty, consumers have to take the diversions via the seller, who can potentially invoke non-delivery by the manufacturer or disproportionate procurement costs if the manufacturer only offers spare parts at high prices. Parliament has called on the European Commission to examine a possible joint liability mechanism between the manufacturer and the seller.

The right to bring claims directly against the manufacturer could in theory be an effective means for consumers to enforce sustainability standards. However, such direct claims by consumers against manufacturers have so far been the exception rather than the rule. The instrument of product liability aims at the protection of legal rights or the compensation of their violation and is thus unsuitable for sustainability goals. An institution

comparable to the French *action directe*⁷⁹ has not yet found its way into harmonised EU law.

However, manufacturer's commercial guarantees, which ensure the functionality of the goods for a certain period of time, have been common practice for a long time, especially for technical devices. In Germany, the commercial guarantee is regulated in Section 443 BGB. It is a separate contract, the conclusion of which is not obligatory and the content of which can be freely formulated. If such a contract has been concluded, the buyer, as the recipient of the guarantee, is entitled to reimbursement of costs, rectification, replacement or the provision of services in the event of a defect. In the case of durability guarantees, Section 443 (2) BGB also establishes the presumption that a material defect occurring during the guarantee period gives rise to rights under the guarantee. In principle, the manufacturer's guarantee offers great opportunities to enforce sustainability standards under private law. For example, it could be agreed that the manufacturer must provide spare parts and repair information or updates in the event of a malfunction or must offer a (free) repair service. However, the issuance of a legally binding declaration is voluntary and can be freely designed and negotiated. It has therefore already been suggested that manufacturers should be obliged to issue a legally binding declaration and to provide information on the minimum service life and the lead time of spare parts for the product and to take responsibility for this.⁸⁰ In order to make the manufacturer's declaration usable for the promotion of repair, not only the "whether" of such an obligation, but also the "how" would have to be addressed in order to avoid similar problems in the intermingling of the scope of voluntary guarantees and legally binding warranties such as with subsequent fulfilment: If manufacturers only undertake to replace the goods within the scope of a legally binding warranty, there is not much added value with regard to the sustainability of the repair.

78 On the link between ecodesign product requirements and contractual updating obligations: Specht-Riemenschneider/Mehner, 2022.

79 Cf. also Atamer 2022.

80 Schlacke/Tonner/Gawel/Alt/Bretschneider Texte 72/2015, p. 154 ff.

What is needed is an “agreement” on the provision of spare parts, a repair service and, if necessary, the provision of a replacement device in case of repair. In order to guarantee a minimum standard, manufacturers should not be allowed to indicate the guarantee period as “zero”.

Last but not least, a discussion on producer liability must take into account the economic reality that most consumer products, especially in the electronics sector, are produced outside Europe. Importers and wholesalers should therefore also be held responsible to a higher degree.

5. Recommendations for action

Preliminary remark: Right to repair out of warranty

What a right to repair outside the scope of warranty might look like has not yet crystallised. It is true that the European Commission has brought up the option of obliging manufacturers or sellers to repair goods free of charge in certain cases beyond the legal warranty.⁸¹ However, such a solution appears neither fair nor economically realistic. Ultimately, the goal of promoting sustainability cannot be carried out solely on the backs of the economic operators and all allocations of risk and responsibility can be undermined. If there is a claim for repair beyond the current legal warranty, this should not remain without a counter-performance obligation. The problem is not that in the case of obsolescence of products there is basically no willingness to pay, because a new purchase costs money. Instead, spending behaviour should be redirected in favour of repair by creating incentives. This can only succeed if products can be repaired, spare parts are available at favourable prices, repair services are accessible and, if necessary, replacement equipment is available for the duration of the repair. In this respect, it is less a matter of establishing concrete rights for consumers, but rather of positioning repair as a feasible course of action and creating an “opportunity for repair”. Support programmes for repair shops and incentive systems (e.g. a reduced VAT rate for repairs⁸²) for their use should be created.

1. RECOMMENDATION Holistic perspective

A central element is the interweaving of public environmental law (especially the Ecodesign Directive) with private consumer law.⁸³ In addition to consumer information obligations and regulations on unfair business practices, consumer sales law offers the most important point of contact. Compliance with sustainability-related public product standards can be enforced individually through sales contracts provided potential deviations from ecodesign standards can be regarded as infringing the objective requirements of conformity, to use the language of the Sales of Goods Directive. The concept of defect in Section 434 of the German Civil Code (BGB), with its broad understanding of quality, is open to sustainable product-related criteria such as the reparability of an item. In order to make the eco-design requirements effective through private law, compliance with eco-design rules should therefore give rise to a presumption of proper quality, similar to the model of the Product Safety Directive in the envisaged regulation of the right to repair. The importance of “dual-track” law enforcement, as demonstrated in this Policy Brief on the basis of the already patchy market surveillance, will come to the forefront even more with the increasing regulatory density in the area of ecodesign product requirements. The responsibility for market surveillance remains with the Member States, but an increase in the capacities of the supervisory authorities is not in sight. A feasible way to coordinate public and private enforcement is to strengthen the position of consumer protection organisations and collective redress, which has no

81 Ref. Ares(2022)175084, p. 3.

82 Cf. <https://www.umweltbundesamt.de/presse/pressemitteilungen/reparaturen-von-haushaltsgeraeten-sollten#:~:text=Also%20repairs%20on%20the%20household%20should%20be%20tax%20deductible,on%20site%20repairs%20can%20be%20tax%20deductible>.

83 So also Tonner, FS Singer, 2021, p. 690; Tonner VuR 2022, 323, 332.

tradition in Germany so far. However, the German legislator is now required to implement Directive (EU) 2020/1828 on representative actions for the protection of the collective interests of consumers of 25 November 2020 (Representative Actions Directive) by 25 December 2022. Following the English model, a *super complaint procedure* could be introduced, enabling consumer protection organisations to press for compliance with action plans and to have an obligation to take action in court.⁸⁴

2. RECOMMENDATION

Preserve room for manoeuvre for Member States

The European Commission is striving for [further] full harmonisation. In view of the uncertainties as to whether and how the goals of sustainable product use can be realised with the existing legal instruments, a *one-size-fits-all approach* should be rejected. Instead, opening space for “regulatory sandboxes” should be envisaged to allow national leeway, especially in those sectors where consumers are confronted with systemic transactions (e.g. in the ICT sector). Experimental clauses on the effect of information on, among other things, the closedness, latency and determinacy of systems are conceivable.

3. RECOMMENDATION

Codesign-friendly reform of the Sale of Goods Directive & enforcing direct claims against manufacturers

The planned revision of the Sale of Goods Directive must internalise the core requirements of the Ecodesign Directive. The adjustments must be fine-tuned in such a way that consumer sales law can contribute meaningfully to the private enforcement of the ecodesign standards. In addition to aligning the concept of defects with the Ecodesign Directive, above all the limitation periods must be geared to existing ecodesign rules for specific product groups. This should be accompanied by an extension of the reversal of the burden of proof. The regulatory approach offered by the newly introduced rules on the update of the software could be extended to all consumer products by referring to ecodesign requirements which define the durability of the product. This should also be clarified in linking the objective requirements under the Sale of Goods Directive with the envisaged reform of the Ecodesign Directive.

In addition, the European Commission should, in accordance with its announcement, consider the possibility of (direct) producer liability. This would correspond to the respective reference in the coalition agreement of the current German Government. When it comes to the more precise design, both the possibility of an *action directe* based on the French model and the possibility of a newly designed manufacturer liability should be considered.

⁸⁴ In this regard: SVRV expert opinion, Verbraucherrecht 2.0, 2016, p. 52, available at: https://www.svr-verbraucherfragen.de/wp-content/uploads/Gutachten_SVRV-.pdf.

4. RECOMMENDATION

Additions to the Ecodesign Directive and “blind spots”

With the introduction of resource efficiency requirements for some product groups as of 1 March 2021, a first important step was taken towards the expansion of the ecodesign approach announced in the Circular Economy Action Plan. Now the European Commission is pushing the project further through the proposal for an Ecodesign Regulation which principally includes all physical goods. However, there is still need for improvement. Consumer interests must be given greater consideration: As far as possible and feasible, an obligation to supply spare parts should apply to end users too and not only to professional repairers, in order to promote do-it-yourself repairs. Whether a spare part is also made available to end users, must be carefully balancing the risk potential and the environmental impact. The provision of spare parts should be accompanied by an explicit reference to repair instructions.

In addition, there should be rules on the price of spare parts. If spare parts are overpriced, consumers have no incentive to choose repair over new purchase. It should be examined whether prices of spare parts should be limited e.g. to a “reasonable” level and whether this is economically necessary and legally feasible. It is crucial to define what a “reasonable” price could be, thereby taking into account the costs of the companies and the return of investment. With regard to enforcement, the procedure on the disclosure of prices below costs could serve as a source of inspiration.

The European Commission should assist the Member States in market surveillance by taking support measures in accordance with the EU Market Surveillance Regulation. In particular, financial and infrastructural assistance should be considered. In order to further ease the burden the market surveillance authorities, use should be made of the possibility of horizontal regulations on product groups provided in the envisaged Ecodesign Regulation, as far as possible and feasible. Horizontal regulations serve to avoid a “patchwork of single regulations and save time, as the elaboration of the ecodesign requirements is extremely time consuming.

5. RECOMMENDATION

Consumer information and awareness raising

The empirical survey demonstrated that many German consumers still lack the awareness and skills necessary for the development of a repair culture. Against this background, corresponding (consumer) policy goals, strategies and measures should be defined and backed up with appropriate resources. In line with the requirements of the UN Sustainable Development Goals, competences not only of consumers but also of manufacturers and retailers should be promoted, monitored and evaluated. It should also be discussed whether, in what form and by whom a label for reparability (within a certain period after purchase) should be developed and awarded.

Bibliography

- Asche, M. (2017). Companion Apps – Produktbegleitende Apps als Nutzentreiber.
- Atamer, Y. M. (2022). Nachhaltigkeit und die Rolle des Kaufrechts: Eine rechtsvergleichende Übersicht zu den Regulierungsmöglichkeiten, *Zeitschrift für Schweizerisches Recht*, Vol. 141 (2022) I Heft 3, p. 285 ff.
- Bach, I., Wöbbeking, M. (2020). Das Haltbarkeitserfordernis der Warenkauf-RL als neuer Hebel für mehr Nachhaltigkeit?, *NJW* 2020, p. 2672 ff.
- Backhaus, K., Bonus, H. (1998). Die Beschleunigungsfalle oder der Triumph der Schildkröte (The Acceleration Trap or the Triumph of the Turtle), hardback edition, 3rd ed, Schäffer-Poeschel-Verlag, Stuttgart.
- Bischke, A., Brack, S. (2022). Neuere Entwicklungen im Kartellrecht: Das Kartellrecht und die Kraftstoffpreise, *NZG* 2022, p. 899 ff.
- Bizer, K., Führ, M., Proeger, T. (2016). Die ökonomischen Auswirkungen einer Verbesserung des deutschen Gewährleistungsrechts, Study commissioned by the Federation of German Consumer Organisations (Verbraucherzentrale Bundesverband e.V.).
- BMUV. Aktivitäten auf UN-Ebene, One Planet Network der Vereinten Nationen (früher 10-Jahres Rahmen für Programme für nachhaltige Konsum- und Produktionsweisen, <https://www.bmuv.de/themes/sustainability-digitisation/consumption-and-products/activities-at-uni-level>
- BMUV (no date). Umweltpolitische Digitalagenda: Digitaler Produktpass, available at <https://www.bmuv.de/faqs/umweltpolitische-digitalagenda-digitaler-produktpassport> (last accessed on 11.10.2022).
- Bracquene, E., Peeters, J., Alfieri, F., Sanfelix, J., Duflou, J., Dewulf, W., Cordella, M. (2021). Analysis of evaluation systems for product repairability: A case study for washing machines, *Journal of Cleaner Production* 281 (2021), pp. 125122 ff.
- Brönneke, T., Föhlisch, C., Tonner, K. (2022). Das neue Schuldrecht. Baden-Baden: Nomos Verlag
- Ceyda, T. (2021). Theory of consumption values in consumer behaviour research: A review and future research agenda, *International Journal of Consumer Studies*, Volume 45, Issue 6, November 2021, S. 1176-1197.
- Croon-Gestefeld, J. (2022). Die nachhaltige Beschaffenheit der Kaufsache, *NJW* 2022, p. 497 ff.
- Cordella, M., Alfieri, F., Clemm, C., Berwald, M. (2021). Durability of smartphones: A technical analysis of reliability and repairability aspects. *Journal of cleaner production* 286 (2021), pp. 125388 ff.
- Davis, F., Bagozzi, P., Warshaw, P. (1989). User acceptance of computer technology - a comparison of two theoretical models, *Management Science* 35(8), p. 982-1003.
- DKE (2022). Digitaler Produktpass: Förderung der Digitalisierung und Kreislaufwirtschaft durch standardisierte Daten, article dated 28.07.2022, available at: <https://www.dke.de/en/areas-of-work/industry/digitaler-product-passport> (last accessed 11.10.2022).
- European Commission (2016). Ecodesign Work Programme 2016-2019, COM(2016) 773 final.
- European Commission (2021). State of the Union: Letter of Intent 2021, available at: https://ec.europa.eu/info/sites/default/files/state_of_the_union_2021_letter_of_intent_en.pdf (last accessed 30.08.2022).
- European Commission, (2022). Invitation to comment on an Impact Assessment: Sustainable Consumption of Goods - Promoting Repair and Reuse, available at: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13150-Sustainable-consumption-of-goods-promoting-repair-and-reuse_en (last accessed 10.09.2022).

- European Commission (2022). Proposal for a Directive of the European Parliament and of the Council amending Directives 2005/29/EC and 2011/83/EU as regards empowering consumers for environmental change through better protection against unfair practices and better information
- European Parliament (2022). Motion for a resolution on the right to repair, available at: https://www.europarl.europa.eu/doceo/document/B-9-2022-0175_EN.html (last accessed 30.08.2022).
- Firsching, L. (2021). Der Kauf von Sachen mit digitalen Elementen, ZUM 2021, p. 210 ff.
- Geibler, J.v., Gnanko, T. (2022). Nachhaltige Konsumentscheidungen durch Künstliche Intelligenz und den Digitalen Produktpass: Forschungsbericht zum Roadmapping der Forschungslinie „Transparente Wertschöpfungsketten“ im CO:DINA Projekt. Wuppertal Institute, Wuppertal. Available online at: <https://codina-transformation.de> (last accessed on 11.10.2022).
- Holbrook, M.B., Hirschmann, E.C. (1982). The Experiential Aspects of Consumption: Consumer Fantasies, Feelings, and Fun, *Journal of Consumer Research*, Vol. 9 No. 2, pp. 132-140.
- Holbrook, M.B. (1996). Customer Value - A Framework for Analysis and Research, *Advances in Consumer Research*, Vol. 23 No. 1, pp. 138-142.
- Immenga/Mestmäcker (2020). Wettbewerbsrecht, 6. Ed. ., C. H. Beck.
- IRP (2020a). Resource Efficiency and Climate Change: Material Efficiency Strategies for a Low-Carbon Future. www.resourcepanel.org/resource-efficiency-and-climate-change-presentation-slides
- IRP (2020b). Resource Efficiency and Climate Change, Material Efficiency Strategies for a Low-Carbon Future, Implications for Business Leaders in Housing and Mobility, [www.resourcepanel.org/resource_efficiency_and_climate_change_implications_business%20\(2\).pdf](http://www.resourcepanel.org/resource_efficiency_and_climate_change_implications_business%20(2).pdf).
- IRP (2020). Resource Efficiency and Climate Change: Material Efficiency Strategies for a Low-Carbon Future. Hertwich, E., Lifset, R., Pauliuk, S., Heeren, N. A report of the International Resource Panel. United Nations Environment Programme, Nairobi, Kenya. Download at: <https://wedocs.unep.org/bitstream/handle/20.500.11822/34351/RECCR.pdf?sequence=1&isAllowed=y>
- Keimeyer, F., Brönneke, T., Gildeggen, R., Gailhofer, P., Graulich, K., Prakash, S., Scherf, C., Schmitt, R., Schwarz, N. (2020). Weiterentwicklung von Strategien gegen Obsoleszenz einschließlich rechtlicher Instrumente, UBA Texte 115/2020.
- Kieninger, E. (2020). Recht auf Reparatur ("Right to Repair") und Europäisches Vertragsrecht, ZEuP 2020, S. 264.
- King, W. R. (2006). A meta-analysis of the technology acceptance model, *Information & Management* 43(6), S. 740-755.
- Kramme, M. (2021). Vertragsrecht für digitale Produkte: Die Umsetzung der Digitale-Inhalte-Richtlinie im Schuldrecht AT, RD i 2021, p. 20 ff.
- Lorenz, S. (2006). Nacherfüllungsanspruch und Obliegenheiten des Käufers: Zur Reichweite des „Rechts zur zweiten Andienung“, NJW 2006, p. 1175 ff.
- Mayer, M., Möllnitz, C. (2021). Gewährleistung für "smarte" Produkte nach Umsetzung der Digitale-Inhalte- und Warenkauf-Richtlinien, RD i 2021, p. 333 f.
- Meffert, H., Burmann, C., Kirchgeorg, M., Eisenbeiß, M. (2019). Marketing: Grundlagen marktorientierter Unternehmensführung. Konzepte – Instrumente – Praxisbeispiele. 13th ed. Springer Gabler, Wiesbaden.
- MDR Thüringen (2022). Reparaturbonus Thüringen: Anträge stapeln sich bereits, available at: <https://www.mdr.de/nachrichten/thueringen/reparaturbonus-100.html> (last accessed 11.10.2022).
- Paal, B., Wais, N. (2022). Die Umsetzungen der Warenkauf- und Digitale-Inhalte-Richtlinie im Überblick, DStR 2022, p. 1164.

- Purnhagen, K. (2021). Public und Private Enforcement im Lebensmittelrecht, LMuR 2021, p. 155 ff.
- Pura, M. (2005). Linking perceived value and loyalty in location-based mobile services, *Journal of Service Theory and Practice*, Vol. 15 No. 6, pp. 509-538.
- Riehm, T., Abold, M. (2018). Mängelgewährungspflichten des Anbieters digitaler Inhalte, ZUM 2018, p. 82 ff.
- Runder Tisch Reparatur e.V. (2015). Encouraging Repair: Reducing Resource Consumption and Encouraging Local Economic Development, available at https://en.runder-tisch-reparatur.de/wp-content/uploads/2016/11/Positionspapier-englisch-layoutet_-11-11-16-1.pdf (last accessed on 11.10.2022).
- Schlacke, S., Stadermann, M., Grunow, M. (2012). Rechtliche Instrumente zur Förderung des nachhaltigen Konsums - am Beispiel von Produkten, UBA Texte 24/2012.
- Schlacke, S., Tonner, K. Gawel, E., Alt, M., Bretschneider, W. (2015). Stärkung eines nachhaltigen Konsums im Bereich Produktnutzung durch Anpassungen im Zivil- und öffentlichen Recht, Umweltbundesamt, Texte 72/2015
- Schischke, K., Berwald, A., Dimitrova, G., Rückschloss, J., Nissen, N.F., Schneider-Ramelow, M. (2022). Durability, repairability and recyclability: Applying material efficiency standards EN 4555x to mobile phones and tablet computers, *Procedia CIRP* 105 (2022), pp. 619-624.
- Specht-Riemenschneider, L., Mehnert, V. (2022). Updates und das "Recht auf Reparatur": Zum Zusammenspiel vertragsrechtlicher Aktualisierungspflichten und der Ökodesign-Richtlinie, ZfDR 4/2022 (to be published in November 2022).
- Sweeney, J.C., Soutar, G.N. (2001). Consumer Perceived Value - The Development of a Multiple Item Scale, *Journal of Retailing*, Vol. 77 No. 2, pp. 203-220.
- Tölle, A. G. I., Benedict, J., Koch, H., Klawitter, S., Paulus, C. G., Preetz, F. (2021). Selbstbestimmung: Freiheit und Grenzen Festschrift für Reinhard Singer zum 70. Geburtstag.
- Tonner, K., Gawel, E., Schlacke, S., Alt, M. (2017). Gewährleistung und Garantie als Instrumente zur Durchsetzung eines nachhaltigen Produktumgangs, VuR 2017, p. 3 ff.
- Tonner, K. (2019). Die EU-Warenkauf-Richtlinie: auf dem Wege zur Regelung langlebiger Waren mit digitalen Elementen, VuR, p. 363 ff.
- Tonner, K. (2022). Mehr Nachhaltigkeit im Verbraucherrecht - die Vorschläge der EU-Kommission zur Umsetzung des Aktionsplans für die Kreislaufwirtschaft, VuR, p. 323.
- University of Cambridge Institute for Sustainability Leadership (CISL) and the Wuppertal Institute (2022). Digital Product Passport: the ticket to achieving a climate neutral and circular European economy? Cambridge, UK: CLG Europe.
- Venkatesh, V., Davis, F. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies, *Management science* 46(2), pp. 186-204.
- Venkatesh, V., Thong, J.Y. and Xu, X. (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. *MIS Quarterly*, Vol. 36, No. 1, pp. 157 ff. <https://doi.org/10.2307/41410412>.
- Weber, F., Faure, M. (2015). European Review of Private Law, 2015 Vol. 4, p. 525 ff.
- Weiber, R. (1997). Das Management von Geschäftsbeziehungen im Systemgeschäft, in: Kleinaltenkamp, Michael/Plinke, Wulff (eds.): Geschäftsbeziehungsmanagement, Berlin 1997, pp. 277-348.
- Weiß, J. (2021). Die Neuerungen durch die Umsetzung der Digitale-Inhalte-RL und der Warenkauf-RL, ZVertriebsR 2021, p. 208 ff.
- Wormit, M. (2021). Europäisches Produktrecht im Zeichen der Ressourceneffizienz: Die neuen Durchführungsverordnungen zur Ökodesign-Richtlinie, EuZW 2021, p. 873 ff.

Appendix 1

Questionnaire CoronaCOMPASS CORE Wave June/July 2022

Status: 19.08.2022

- S1. [Year of birth]
Display: Pull-down
filter: None, to all **Question text:**
 First of all, we would like to ask you a few questions about yourself.
 What is your year of birth?
- [pull-down list]
 [→ born after 2004 end]
- S2. [Gender]
Display: single selection side by side
Filter: None, to all
Question text:
 What is your gender?
- male
 female
 diverse
- S5. [Education]
Representation: single selection among each other
Filter: None, to all
Question text:
 What is your highest general school-leaving qualification?
- Secondary or primary school leaving certificate
 Secondary school leaving certificate or polytechnic secondary school
 leaving certificate A-levels, entrance qualification for universities of
 applied sciences
 Left school without school-leaving qualification Still in
 school education
- S6. [Household size] **Display:** Pull-down **filter:**
 None, to all **Question text:**
 How many people live permanently in your household, including yourself? Please also
 think about the children living in the household!
- [Pull-down list 1-8, 9 and more]
- [Introduction Repair]
Representation: Text
Filter: Sample 2 **Question text:**
 The following are some questions about repairing digitally connected devices. These
 include smartphones, tablets, smart watches and smart TVs.

NL1 [Sustainability Literacy Index]

Display: Touch Grid **Filter:**

Sample 2

Question text:

When you think about repairing such devices, for example smartphones, tablets, smart watches or smart TVs, how much do you agree with the following statements?

1. Before buying a device, I find out whether it can be repaired.
 2. When purchasing a new appliance, the question of whether the appliance can be repaired is an important criterion for selection.
 3. I know where I can get such a device repaired.
 4. There are enough places where you can have such a device repaired.
 5. I replace devices even when they are actually still in order.
 6. I would opt for a repair even if a new purchase were possible at the same price.
 7. I would opt for a repair even if it would be quicker to buy a new one.
 8. I trust myself to carry out minor repairs.
 9. I would give up certain quality features such as waterproofness if the device could be repaired better in exchange.
- a. agree fully
 - b. tend to agree
 - c. partly / partly
 - d. rather not agree
 - e. Do not agree at all

NL2 [Sustainability Literacy Index: Importance]

Representation: Grid

Filter: Sample 2 **Ques-**

tion text:

How important are the following aspects for you to repair digital devices more often in the future than today?

1. A so-called repair label, which contains summary information on whether and how well the appliance can be repaired
 2. Offer of a free replacement unit during the repair
 3. Possibility to carry out repairs yourself instead of in a workshop
 4. More information about the reparability of a device
- a. very important
 - b. rather important
 - c. partly / partly
 - d. rather unimportant
 - e. not at all important

NL3 [Sustainability Literacy Index: open demand]

Presentation: open question, text field without length limit

Filter: Sample 2, if at least one of the items 1-4 in question NL2 is very or rather important.

Question text:

Why would that be important to you?

21. [Life satisfaction] **Display:** slider **Filter:** none

Question text:

Finally, we would like to ask you about your satisfaction with your life overall. How satisfied, all in all, are you with your life at present?

Please answer using the following scale, where the value 0 means: completely dissatisfied and the value 10: completely satisfied. You can use the values in between to grade your assessment.

completely and
even dissatisfied

completely and
even satisfied

0 1 2 3 4 5 6 7 8 9 10

Appendix 2

On 31 August 2022, the European Commission published a draft for an implementing regulation based on the ecodesign preparatory study for cordless telephones, smartphones and tablets, which is also considered in this Policy Brief. The trend that began last year is clearly being continued: While ecodesign implementing regulations have long been limited to energy efficiency requirements, resource efficiency is now playing a greater role.

Recital 3 of the draft explicitly addresses the need for resource efficiency requirements to prevent premature obsolescence and to promote the repairability and reliability of products.

According to the draft regulation, the resource efficiency requirements are divided into four sub-categories. The requirements for smart phones serve as an example here:

1. Design specifications so that products are repairable and reusable. Here, the specifications on the availability of spare parts and access to repair and maintenance information take up the most space. However, it is no less important, for example, that the maximum delivery time for spare parts is limited to five working days and that a regulation is made on maximum prices for spare parts.
2. Smartphones should be designed to be 'reliable' ('Design for reliability'). The regulations concern drop and scratch resistance, dust and water tightness and battery life. Particularly important for ICT devices in this context are the regulations on the provision of operating system updates. Security updates must be provided up to five years, function updates up to three years after a smartphone has been placed on the market.

3. Plastic components heavier than 50 grams must be marked accordingly.
4. Finally, requirements are placed on the recyclability of the products. In addition to resource efficiency requirements, there are also information requirements. Manufacturers are required to make certain information publicly available, such as information on compatibility with removable memory cards or operating instructions.

In our opinion, the ecodesign standards should be extensively linked to the appropriate civil law rules. This concerns the filling out of the concept of defects in sales law, in particular through resource efficiency requirements in relation to repairability, but also the reference of the information obligations established by the Consumer Rights Directive and the UCP Directive to the information requirements of ecodesign.

ADVISORY COUNCIL FOR CONSUMER AFFAIRS

The Advisory Council for Consumer Affairs was established in November 2014 by the then Federal Minister of Justice and Consumer Protection, Heiko Maas.

The Advisory Council for Consumer Affairs is to support the federal ministry responsible for consumer protection and consumer policy in shaping consumer policy on the basis of scientific findings and taking into account practical experience.

The Advisory Council for Consumer Affairs is independent and has its seat in Berlin.

The Chairman of the Advisory Council for Consumer Affairs is Prof. Dr. Peter Kenning.