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Photo: Marija Ostojic is an artist and media designer whose practice explores identity, migration, and social transformation across painting, film, and participatory formats. This work is part of an exploration of transformation as a complex process that unfolds both internally and externally - not linear, but chaotic, contradictory, and open. Colour carries tension as it accumulates, overlaps, and breaks apart. Transformation does not appear here as a clear before and after, but as a continuous state of becoming.

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Nora Krenmayr, Benjamin Fleischmann, Gabriel Eyselein, Anke Schaffartzik, Melanie Pichler

Shaping the future of e-waste in the EU: Imaginaries, actors, and interests[1]

Abstract *Recycling alone cannot resolve the escalating challenge of electronic waste (e-waste), as rising device production and planned obsolescence outpace recovery efforts. Despite the European Union's advances in recycling policy, structural limits undermine its impact. Drawing on 20 expert interviews, this paper distinguishes three imaginaries of the future of e-waste: recycling, circularity, and sufficiency. It argues that transformative change in the e-waste sector requires moving beyond optimisation within existing systems and challenging the growth imperatives that underpin production and consumption, while confronting the root causes of e-waste and the globalised inequalities they (re)produce.*

Keywords *digitalisation, recycling, circularity, transformation, sufficiency*

1. Introduction

The growing volume of e-waste has significant impacts on both the environment and human health. According to the Global E-Waste Monitor, 62 million tons of e-waste are produced annually on a global scale, projected to grow to 82 million tons by 2030 (Baldé et al. 2024). This makes e-waste one of the fastest-growing waste streams, both globally and in Europe (Forti et al. 2020). E-waste includes discarded computers, monitors, motherboards, mobile phones, chargers, headphones, and television sets, as well as air conditioners, lamps, washing machines, and refrigerators (Eurostat 2022). These appliances contain toxic chemicals such as heavy

metals and organic pollutants alongside valuable minerals (e.g. gold, silver, iron, aluminum, and copper) and plastics (Ilankoon et al. 2018), making e-waste a resource that can be extracted for profit (Theis 2021).

The production of electric and electronic equipment is organised through global production/destruction networks (Herod et al. 2014), connecting raw material extraction, component manufacturing, assembly, waste collection, end-of-life treatment and recycling across diverse sites and actors (Crang et al. 2013; Schlitz 2020). Within this global division of labour, Europe is the leading producer and collector of e-waste per capita (Shahabuddin et al. 2022). It sets a benchmark for e-waste legislation through its categorisation of Waste Electrical and Electronic Equipment (Borthakur 2020). Since 2002, the EU has recognized e-waste as a distinct waste stream, moving away from its previous classification as metal scrap or residual waste. The *Waste Electronic and Electrical Equipment Directive* (EC 2002) established recycling targets and holds producers responsible for the collection and recycling of e-waste. Revisions starting in 2010 have transformed the EU's approach to e-waste, shifting the focus from mere waste management to e-waste as a valuable source of (critical) raw materials. This shift was driven by global supply constraints and risks associated with critical materials, particularly as emerging economies such as China's have intensified competition, leading to an increasing politicisation of Europe's import dependencies. The EU has responded by pushing for the collection and recycling of e-waste, as well as by banning waste exports (Kama 2015).

Currently, the EU is falling short of its stated collection and recycling ambitions. While from 2012 to 2022 the total amount of e-waste collected increased by 68 % and the volume of e-waste recycled and prepared for reuse grew by 67 %, the total amount of electrical and electronic equipment brought to the market surged by 89 %. The EU's total collection rate for e-waste only reached 40.1 % in 2022, compared to a target of 45 % in 2016 and 65 % in 2019 (Eurostat 2024). According to Eurostat data, 24 out of 27 member states did not reach the EU collection target (EEB 2022). In Europe, e-waste collection relies on municipal schemes and retail take-back channels, with extended producer responsibility playing a key role. The latter means that companies selling electrical equipment have to manage collection and treatment, leading to many producer responsibility

organisations, through which producers and importers seek to meet legal requirements in a cost-effective way (Salhofer et al. 2016).

In 2024, the EU adopted the *Ecodesign for Sustainable Products Regulation* (ESPR) and the *Right to Repair* to address the rising generation of e-waste (EC 2024a). The ESPR, which replaces the 2017 *Ecodesign Directive*, focuses on resource efficiency in addition to energy efficiency, establishing a framework for enhancing product durability, repairability, and recyclability. The specifics are to be discussed and enacted in the coming years. The ESPR introduces mandatory sustainability labelling, minimum recycled content standards and a *Digital Product Passport*. The *Right to Repair Directive*, in effect since 2021 for certain appliances, is expanding to include smartphones and laptops, with a focus on facilitating accessible repairs (EC 2024b). However, concerns remain regarding the specifics of repair rights, the narrow scope of covered products, and the lack of provisions to ensure affordable repair options. Critics argue that current measures do not sufficiently pressure manufacturers to support independent repairs or prevent anti-repair practices (Right to Repair Europe 2024a). The ongoing public consultation for the Circular Economy Act, set for adoption in 2026, aims to further address these issues (EC 2025).

Global production and distribution of e-waste is deeply entangled with development concerns and (re)produces global inequalities (Laser/Schlitz 2019; Lepawsky 2018). Discarded electronics from high-income countries frequently end up in low- and middle-income countries, where informal recycling under hazardous conditions poses severe health and environmental risks (Baldé et al. 2022; Sovacool 2019). Patterns of environmental burden-shifting are thus reproduced, rendering e-waste not only a technical management problem but also a question of global justice and uneven development.

Research and policy tend to consider e-waste a management problem that needs technical solutions and improved governance (Leclerc/Badami 2024; Soesanto et al. 2023). Such a perspective commonly overlooks the competing visions for the future of e-waste that shape transformation strategies and the structural conflicts between them. This paper addresses this gap by examining the imaginaries that guide actors. Such a conflict-oriented perspective refrains from conceptualising sustainability challenges in the e-waste sector as mere management problems. It shows

that particular problem perceptions and pathways are linked to political-economic structures and interests that co-determine if and how sustainability challenges are tackled (Kovacic et al. 2020). Drawing on 20 expert interviews, we distinguish three imaginaries of the future of e-waste: recycling, circularity, and sufficiency. We argue that these imaginaries reflect fundamentally different assumptions about economic organisation, power relations, and the possibilities for transformation. The contribution of this paper is threefold. First, we apply the imaginaries framework specifically to e-waste, which has not been done in a systematic way before. Second, by foregrounding the structural conflicts between recycling, circularity, and sufficiency logics, we reveal how these competing visions are shaped by unequal power relations between actors. Third, we show that even circularity, often presented as a transformative alternative, operates within growth paradigms, and that only sufficiency challenges the root causes of the e-waste problem. In doing so, the paper reveals potential entry points for transformative change that go beyond technical optimisation.

2. Theory and method

This paper is situated at the intersection of science and technology studies (STS) and the political ecology of waste. By combining these perspectives through the concept of imaginaries, we aim to reveal the contested visions that shape e-waste management and to identify structural obstacles to transformative change. The concept of imaginaries is useful to understand how shared visions of the future shape and influence technology and policymaking (Jasanoff/Kim 2015; Sovacool et al. 2020). Imaginaries are closely linked to the organisation of institutions and economic activities and imply particular modes of production, consumption, and values. As different actors push for their specific visions and agendas, imaginaries are continuously redefined, shaping which futures are seen as plausible or desirable. Imaginaries are inherently contested, as they are used to justify and legitimise certain pathways while marginalising others. The abstraction of imaginaries sheds light on alliances in shaping economic responses and policies at multiple scales (Levy/Spicer 2013). Imaginaries condition how policies evolve by driving the discourse around technolog-

ical futures. They influence which innovations gain support, how resources are allocated, and which actors are involved, ultimately shaping infrastructures and innovations by privileging certain imaginaries over others (Dorn 2024). However, the relationship between policies and imaginaries is ambivalent and not unidirectional: Policies structure imaginaries by providing a framework, while at the same time being influenced by imaginaries. In a complex interplay, policies and imaginaries shape and redefine one another. While policy is typically constrained by what is deemed imaginable, it may certainly call for change that is difficult to imagine.

Uncovering imaginaries is particularly relevant for sustainability transformations, as it helps to elucidate alliances and divisions among actors, which shape the formulation and implementation of policies. In the context of e-waste, we interpret imaginaries as visions of sustainable resource use that shape distinct transformation pathways. To examine imaginaries, we used a multiple methods approach that combines expert interviews with the analysis of policy documents and position papers (Torres/Niewöhner 2023). As an empirical entry point, we screened comments from the online public consultation on EU proposals that concerned the product category "information and communications technology and electronics" (EC 2022). From these consultations, we identified key actor groups, which we clustered around the three imaginaries that emerged from the analysis: recycling (recycling companies, hardware producers, business associations); circularity (EU Commission, national and local governments); and sufficiency (environmental NGOs, repair and reuse companies, civil society initiatives). The lead author also participated in the E-Waste World Conference in Frankfurt (2021), the international PREUSE conference in Vienna (2022), and an online reuse workshop (2023), and had the opportunity to visit an e-waste dismantling site and a reuse shop floor in Vienna. We used her impressions, conversations, and sources alongside the interview material to substantiate the imaginaries (Mutter 2019). In 2022, the lead author further conducted three exploratory and 17 semi-structured expert interviews with representatives of the identified actor groups. By selecting representatives from public administration and governments, scientific recycling experts, hardware producers, recyclers, repair and reuse companies, and producer responsibility organisations (see appendix), we aimed to consider experts from as many constitutive fields as possible.

We coded the interview material using atlas.ti, following both inductive and deductive coding. In the deductive phase, we drew on imaginaries studies (Lefstad et al. 2024) and critical policy analysis (Sum/Jessop 2013) to code the material based on analytical categories, for example 'problem definition' and 'objective and strategy'. Further inductive codes arose directly from the interview material. In an iterative process, we then condensed the material into the three imaginaries. These represent analytically distinct positions identified through the clustering of actors' problem definitions, strategies, and underlying assumptions about economic organisation. Individual actors may hold elements of more than one imaginary, but the distinction serves to make the structural tensions and conflict lines visible.

The insufficient recycling and reuse of e-waste, as highlighted by Eurostat data, and the ongoing discussions surrounding effective policy-making, illustrate that the EU is still far from a state of sustainable e-waste management and that significant political contestation exists regarding this issue. The framework conditions considered by actors are more complex than technical solutions alone and include the constraints of the imperatives of profitability, market competition, and cost minimisation that characterise capitalist production, as well as the competing visions for the future of e-waste. As we show in the following sections, conflicts arise precisely at the intersections of these competing visions, where actors with unequal degrees of structural power seek to shape the trajectory of e-waste management.

While we focus on uncovering the potential lines of conflict of a broad range of actors across the political and societal sphere, we could not include all actors which are relevant to digital technologies and e-waste management. For instance, the literature and several interviewees recognised users as important actors. Often, the purchase of new devices goes hand in hand with the (perceived) obsolescence of devices and the lack of a repair culture due to costs and the lack of access, skill and time, hindering more sustainable consumption behaviour (Jaeger-Erben et al. 2021; Sandez et al. 2023). Users are not a homogenous group and their perspectives on e-waste are likely to differ widely. The polls and interviews that would have been required to adequately represent users were, unfortunately, not

feasible within the constraints of time and other resources imposed on this study. The choice to focus on producers was deliberate and based on our opinion that debates on waste should not succumb to consumer scapegoatism, which would overly shift responsibility from production to consumption (Lepawsky 2020).

3. Imaginaries of e-waste

In the following, we describe recycling, circularity, and sufficiency as three imaginaries of e-waste (Figure 1). Since these imaginaries are analytical abstractions, there is some overlap between them in practice, and actors cannot be neatly and distinctly aligned with just one. For example, scientists and their problem definitions and positions are spread across a broad spectrum of imaginaries from those of technological optimism to a very fundamental critique of the economic system. To enhance analytical clarity, we nonetheless present the imaginaries as separate. The underlying differentiation between imaginaries is based on the actors' perceptions and on what they frame as problems regarding e-waste. Based on the actors' specific problem definitions, we analyse how they imagine the future (objectives) and how they seek to address the problems at hand in order to achieve their objectives (strategy). The structure is data-driven, including direct quotes from the interviews (referred to as expert 1 to 20, E1-E20) and drawing on additional sources to enrich the qualitative data (Sovacool 2019).

Figure 1 shows the three imaginaries of recycling, circularity, and sufficiency, structured according to the analytical categories of actors, objectives, and strategy. The shared problem definitions (profit-orientation, planned obsolescence, lack of information and of spare parts) are recognised across all three imaginaries but interpreted differently. Recycling actors treat profit-orientation as a given constraint within which to optimise; circularity actors see it as something that can be redirected through product redesign and policy; sufficiency actors identify it as a root cause that must be structurally challenged.

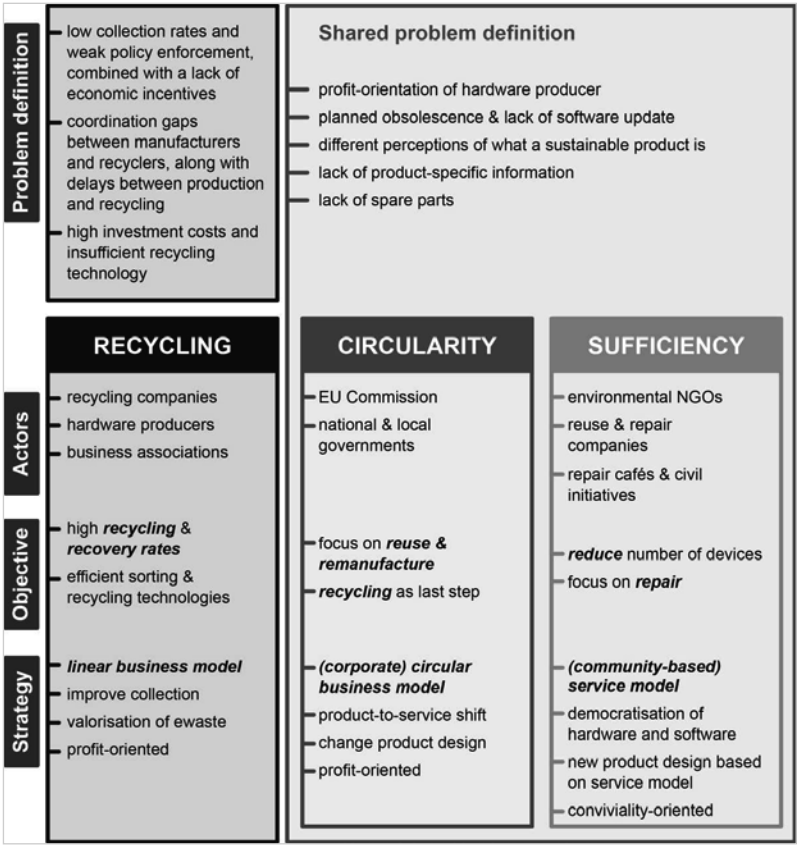

Figure 1. Three imaginaries of e-waste, own illustration

3.1 Recycling imaginary

Since the 1990s and in response to the growing e-waste problem, the European Union has formulated increasing recycling and recovery rates as a priority. The EU Commission initially recognised the dual need to manage rising e-waste volumes and to protect the environment from hazardous substances. At the same time, recyclers identified profit opportunities, particularly in the recovery of valuable metals (E5, E13, E15). The 2002 Waste Electrical and Electronic Equipment Directive constituted a

major turning point. This directive raised awareness of e-waste as a critical waste stream and introduced the extended producer responsibility system, which directed significant quantities of e-waste into formal recycling channels (E10). According to the manager of a producer responsibility organisation (E13), this shift had profound socio-economic effects, enabling industries to specialise in processing specific material streams. Prior to the implementation of the directive, electrical and electronic appliances were not collected separately, making it difficult for recycling plants to source suitable materials.

Problem definition

The main actors that shape the recycling imaginary are recycling companies, hardware producers, and business associations. Actors following this imaginary tend to frame the lack of policy enforcement and effective collection as a substantial problem of current e-waste management in the EU. According to them, there is a lack of both knowledge about, and practical options for, collection and recycling. This leads to consumers stockpiling devices at home after the use phase, keeping them from being reused or recycled, or to improper disposal as residual waste. Representatives of recycling companies and technical scientists tended to allude to this imaginary, emphasising the irresponsibility of consumers as a more decisive factor than institutional arrangements (E4, E6, E14). Next to the consumers, other actors were also seen as hindering the achievement of recycling targets: several interviewees described unreported collection, uncontrolled exports, theft of materials, and informal recycling as major issues (E3, E7-E11, E13, E14). These observations are also echoed in the scientific literature, which has argued that the high cost of treatment and of proper disposal of non-recycled and unprocessed material results in high quantities of e-waste exported (Ilankoon et al. 2018; Salhofer et al. 2016), with inspection capacities unable to keep up with the overall movement of materials (Baldé et al. 2022). Uncontrolled exports of e-waste from Europe may be intercontinental (e.g. to Africa) but also take the shape of an intraregional movement from Central to Eastern Europe, which is emerging as a waste import hotspot (ibid.). Exports from (Central) Europe occur partly due to the high treatment costs of e-waste, with exports intended for reuse constituting the main driver for used elec-

tronics exports (E8). Often, however, the appliances that are labelled for reuse are actually broken, which means that they constitute a hidden (and illegal) export of e-waste (E9, E10, E13, E14). These export dynamics reproduce the globalised inequalities that Laser and Schlitz (2019) identify as characteristic of waste trajectories more broadly.

Several interviewees emphasised that regulatory and economic incentives for more rigorous e-waste management are lacking (E6, E18). They criticised EU quotas for collection and recycling, especially citing the disproportionate impact of heavier appliances on the mass-based quotas (E4, E6, E9, E10, E11, E13). Because they are relative rates rather than absolute figures, the targets also fail to account for increasing production and sales (E4, E11, E13). One researcher pointed out that, in addition, mass-based quotas lead recyclers to focus on bulk metals such as iron and copper, neglecting rare and sometimes more environmentally hazardous metals (E6). Additionally, uniform recycling quotas across different e-waste types ignore material quality and precious metal content (E15).

Another challenge is the economic viability and technological feasibility of recycling facilities: they require substantial initial investment and lengthy ramp-up periods. The technology necessary for processing old electrical equipment is quite advanced, and achieving certain economies of scale is essential to ensure the operation is financially viable (E3, E8, E9, E10, E14). Therefore, there is a trend toward large-scale plants for metallurgical processing, which can achieve the desired concentrations and quality of recovered precious metals (E10). It is noteworthy that Europe also imports e-waste, primarily printed circuit boards, which are processed in specialised smelters. The main reason for this import is commercial, as printed circuit boards contain high concentrations of valuable metals (E4, E10). Currently, there are only three large integrated smelters in the EU (Aurubis in Germany, Umicore in Belgium, Boliden in Sweden) that can handle e-waste and which achieve, for example, in the case of metals such as copper, gold, steel, and aluminum, a material recovery of 95 % compared to 50-70 % with methods that are less capital-intensive (E3, E8, E10; see also Manhart 2011). However, critical raw materials as well as iron do not show high recycling rates, due to their low concentration in e-waste and complex product design, making it economically unfeasible to recover them (Parajuly et al. 2019). An interviewee questions "whether it pays off at

all if you want to go into these raw materials that are only present in traces in electrical devices" (E13).

One recycling manager reported facing uncertainties and financial risks due to fluctuating e-waste volumes and market prices (E14), while a recycling researcher pointed out that e-waste contains a variety of materials and metal alloys; however, these streams are often contaminated, which diminishes the value and leads to significant downcycling (E18).

An interviewee emphasised that while there are ongoing efforts to enhance sorting technology, much of the process remains manual and underdeveloped. For instance, workers often have to manually remove batteries before shredding, which hampers recycling speed (E4). A recycler commented on this situation, expressing the opinion that while there is a sense of technological optimism in the waste management industry, the existing technology is not yet advanced enough to process mixed waste electrical equipment effectively and to recover highly concentrated material fractions (E14).

The lifespan of (new) appliances somewhat paradoxically becomes more of an obstacle for recyclers. In fact, to them, the lifespan of a new product represents a 'time lag' between production, market placement, and recycling of a duration of five to 25 years, during which time they are not yet able to develop the technologies and processes necessary to handle these new e-waste streams (E1, E3, E5, E10). Recyclers must manage current flows while preparing for future unknowns as best they can (E9, E11). Rapid technological innovations and the emergence of new product groups complicate recycling, as recyclers must adapt to evolving appliance sizes and new device functions. Additionally, changing material compositions and concentrations of valuable materials make it difficult to predict future recycling revenues, rendering the business volatile and unstable (Manhart 2011). As value chains for electrical appliances become increasingly fragmented and complex, they also encompass ever more stakeholders with diverse interests, hindering connection and impeding collaboration (E16). In this context, the Digital Product Passport introduced by the ESPR could play a significant role. By providing product-specific information on material composition and recyclability, it could bridge the information gap between producers and recyclers. However, as several interviewees noted, its effectiveness depends on what information

is included, who has access, and whether the Digital Product Passport remains usable over the long lifespan of products (E4, E5, E13).

Objectives and strategies

The primary goal of actors with the recycling imaginary is to achieve higher recycling and recovery rates. From their perspective, reaching this objective requires the implementation of improved collection systems, the systematic economic valorisation of e-waste, and the adoption of advanced sorting and recycling technologies. Interviewees consistently highlighted the critical importance of enhancing collection and separation processes, as effective sorting is essential for successful material recovery. Poor sorting practices can significantly hinder recycling rates, often leading to the downcycling of valuable materials. Moreover, the experts stressed that recycling targets should focus on the quality and value of recovered materials rather than simply increasing the quantity (mass) of recycled waste. Achieving this goal requires regulatory measures and stronger economic incentives for recycling and the deployment of advanced sorting technologies to improve material circularity (E4, E5, E6, E10, E13, E15, E18). Concrete proposed strategies encompass implementing a take-back system that includes a compulsory deposit (E10, E14), which consumers receive back when they return an appliance. The retail sector is crucial in this context, as it faces the logistical challenges associated with such systems and requires appropriate incentives to facilitate implementation (E13). Additional collection options include municipal curb-side collection as well as container collection at retail outlets, as noted by Salhofer et al. (2016). Further, a waste management expert suggested the establishment of an artificial market for secondary materials by mandating their use in primary production (E15). This approach aims to stimulate demand for recycled materials and improve overall recycling rates. As certain material compounds can make components unrecyclable, cooperation between hardware producers and recyclers could enhance recycling processes by providing more homogeneous material batches (E4, E9, E10, E12, E13, E14).

These objectives and strategies reflect the profit-driven nature of production and recycling, giving rise to a demand for ever-increasing material inputs. A manager from a hardware company noted that the pressure to keep prices low and generate profit significantly impedes the production of

more sustainable products. He highlighted the challenge of balancing regulatory requirements, sustainability improvements, production costs, and market prices. Although the company recognises solutions for enhancing product sustainability, there are concerns about their market viability (E11). Another representative of a hardware producer noted that his company recognises the unsustainable nature of current resource consumption but feels limited by market forces. He mentioned that the company would not independently pursue the development of more durable and repairable products, as doing so could place them at a competitive disadvantage (E12). Hence, overcoming this inherent logic is essential in order to enhance the overall effectiveness of e-waste management in the EU. These structural constraints illustrate a key power dynamic: hardware producers, often large multinational corporations with significant lobbying capacity, set the parameters within which recyclers and other downstream actors must operate.

3.2 Circularity imaginary

While the recycling imaginary seeks to maintain business-as-usual production and consumption with lower environmental impact, it implicitly supports continued economic growth, albeit with greater resource efficiency. Circularity goes further, aiming to decouple economic growth from material inputs by closing resource loops by redesigning products. A concrete example helps illustrate the distinction: whereas recycling asks how to better recover copper from a shredded circuit board, circularity asks how to design the circuit board so that it can be disassembled, refurbished, or its components reused.

Problem definition

Actors shaping the circularity imaginary are policymakers at the EU, national, and local levels, along with researchers. Among such actors, awareness of resource scarcity has grown. Recent crises, such as supply chain disruptions resulting in raw material shortages and price spikes, have heightened this awareness. Circular systems, especially in electronic waste, provide access to resources, such as rare earth materials (E16), that are scarce in Europe. However, as interviewees (E10, E17, E20) highlight, the economic framework currently incentivises manufacturers to seek profit

mainly from production and sales and not from the use-phase. The resulting linear business model discourages easy repairs, as profits depend on continuous sales rather than durable products. As one researcher succinctly puts it: "The producer wants to produce as cheaply as possible and wants to sell as much as possible. That's not an accusation, but that's just the way it is. That means you have to force the industry to do it", 'it' being to design products differently (E6).

A key example of unsustainable profit-making is planned obsolescence, which is not merely a design flaw but a structural feature of growth-oriented capitalist production: manufacturers depend on continuous product cycles to sustain revenue and market share. Following this logic, durability becomes a competitive liability rather than an asset. As a result, product lifespans are deliberately shortened, for example, through non-removable batteries. Manufacturers, however, claim that gluing batteries into devices enhances durability and reduces the risk of improper consumer replacements (E4, E10). Additionally, the lack of software updates can limit the usability of devices, even when the hardware is still functional. A manager from a repair and reuse company noted that discontinued software support after just a few years raises questions about the device's continued usability. The hardware industry's reluctance to offer extended software support is often attributed to the associated costs (E4, E19).

Another interviewee from a business association noted as a further problem that perceptions of what constitutes a sustainable product vary significantly, thereby impacting life cycle accounting and product labelling (E4). He pointed out that while some products prioritise durability, they may neglect recyclability. Among producers and researchers, opinions diverge as to which (durability or recyclability) should be prioritised in order to improve sustainability. In this regard, a standardisation expert emphasised the need for indicators of sustainability at each stage of the product life cycle, cautioning against focusing on a single indicator at the expense of others (E5). Another interviewee, a manager from a hardware company highlighted that indicators for recycled content, recyclability, durability, and repairability are interdependent and can negatively impact one another. He also mentioned that the relationship between circularity and environmental impacts is not always positive, which can create conflicts of interest among stakeholders. For instance, while repairability

can enhance durability, it may adversely affect other factors such as recycled content or reliability (E11). A representative from a producer responsibility organisation noted that the industry remains primarily driven by recycling and energy efficiency incentives rather than genuine environmental concerns: "the industry is not getting greener" (E13). This last observation deserves emphasis. A profit-oriented corporation, particularly one subject to stock market capitalisation, is unlikely to extend its environmental commitments beyond legislative requirements unless doing so provides a competitive advantage, helps direct future regulation, and satisfies shareholders (Schneider 2020).

Objectives and strategies

Proponents of the circularity imaginary advocate for a strategy that emphasises corporate circular business models, a shift from product ownership to service-based offerings, and a redesign of products to enhance circularity. The primary focus of circularity is on reuse and remanufacturing, and recycling is regarded as a last resort, only to be considered when other options have been exhausted.

Policy is seen to play a vital role in advancing circularity, as one expert pointed out that voluntary agreements with the industry have proven ineffective (E7). Over the past decade, industry lobbyists have come to realise the futility of resisting the push for more circularity of material. While the lobbyists initially aimed to preserve the status quo and improve recycling efforts, pressure from EU policy caused a strategic shift towards circularity (E7). Hardware producers increasingly embrace circularity strategies (E4, E5), focusing on product design and shifting their revenue focus from products to repairs and spare parts, and incorporating more recycled materials into their product designs (E5, E12, E18). Notably, companies such as Apple are adopting circular practices, including take-back systems and automated dismantling for iPhones (E12, E13, E14). Furthermore, pilot projects for leasing and take-back options for vacuum cleaners and washing machines are gaining traction (E7, E10, E12, E13, E18).

Manufacturers increasingly have an interest in the returning of devices for their own production, and in maintaining control over recycled materials (E19). Service contracts that include free upgrades and repairs give producers decision-making power over products at the end of their life

cycle (E10). Initiatives aimed at closing material loops or extending product lifespans strengthen customer relationships and provide a competitive edge (E12). While leasing models are common in business to business, they are still largely in the pilot stage for private consumers (E10, E12). Intermediary platforms providing product-as-a-service models are emerging, giving customers access to products from various brands through a single point of contact (E12). Some manufacturers see these models as a way to build long-term customer relationships, while others believe refurbishing and reselling high-end devices is currently more viable (E13). In the use of copiers, where users pay per printed page, product-as-a-service is already operational, incentivising manufacturers to create durable devices with low maintenance costs (E19).

3.3 Sufficiency imaginary

While circularity goes further than recycling, it does not challenge the foundations of growth or profit maximisation. Sufficiency, by contrast, envisions a more radical transformation. Its overarching goal is to reduce both production and consumption, to build systems based on durability, repairability, and long-term use, and to fundamentally reorient economic and social values away from continuous material throughput. Sufficiency challenges the growth imperative of industrial capitalism that drives the ever-increasing production and consumption of electronic devices.

Problem definition

Sufficiency advocates are diverse, and include environmental NGOs, reuse and repair companies, repair cafes, and grassroots civil society initiatives. They question whether merely enhancing resource efficiency and circularity can effectively address the e-waste problem, arguing instead for a comprehensive reduction in the demand for and production of electronic products while emphasising the importance of repair. From this perspective, demand and/or supplyside foci do not suffice. Instead, associated lifestyles and the broader question of which services and what kind of well-being technology should deliver must be addressed (Pichler et al. 2025). On the demand side, sufficiency means consumers use devices longer, share them, and resist marketing-driven upgrade cycles. On the supply side, it entails challenging the overproduction of (new) devices, banning

the destruction of unsold electronics, and redesigning business models around the longevity of products rather than volume. Sufficiency thus targets the systemic conditions of overproduction and overconsumption, not individual consumer choices alone. Sufficiency may thus contradict broader trends like digitalisation, product fetishisation, conspicuous mass consumption, planned obsolescence, and economies of scale in production, all of which favour high-volume, low-cost production, often in low-wage countries (E14, E19).

Reuse and repair companies face significant challenges, primarily due to a lack of product-specific information and spare parts from hardware producers (E3, E5, E6, E7, E10, E14). For instance, one repair representative noted difficulties in identifying materials used in products, such as whether a washing machine tub is plastic or stainless steel, as technical data sheets often lack this crucial information (E7). Despite these challenges, another hardware manager observed that repairability has improved compared to 10-15 years ago, when spare parts were even scarcer (E12). Today, while repair options have expanded, aided by resources such as repair websites, ensuring safe and effective repairs remains a challenge. This situation often leads companies to prefer collaboration with repair firms over promoting self-repair on the part of users (E12).

Financial support for repairs is essential to extending product lifespans, as new products are, from the perspective of sufficiency advocates, often too cheap due to globalised supply chains (E10, E18), while high labour taxes in Europe further disadvantage repair services (E16). In this context, public sector initiatives play an important role by subsidising the cost of repairs and shifting consumer cost calculations in favour of repairing rather than replacing devices.

Friction further arises when reuse models, often driven by social organisations, become profitable, and larger private companies enter the scene, either as investors or with their own reuse models. This influx can crowd out smaller, independent reuse and repair players, as big corporations integrate repair and reuse into their own in-house processes (E16). This dynamic creates a tension between the need for broader participation in repair efforts and the market dominance of larger players. Additionally, measures such as the Digital Product Passport could inadvertently harm the reuse sector. While the intent is to improve product circularity, the

regulations could create barriers for smaller players trying to compete with larger firms on online marketplaces (E20). These dynamics reveal a significant power asymmetry: when sufficiency advocates participate in EU-level consultations on repairability standards, they are structurally outnumbered by representatives of large hardware manufacturers, which bring greater financial resources, institutional access, and lobbying capacity (E17). This asymmetry shapes the regulatory outcomes in ways that tend to favour industry interests over community-based alternatives.

A significant critique of EU regulations from sufficiency advocates is the EU regulations' predominant focus on products and product design, rather than on transforming business models (E19, E20). Sufficiency proponents argue that innovative business models should be prioritised, with product design following suit. Many current products, such as inkjet printers, are designed primarily for sales rather than for serviceability. The revenue model for these products typically involves selling the printer itself, followed by ongoing sales of ink, and eventually pushing consumers to purchase a new printer after a few years (E13). Additionally, a representative from the reuse sector pointed out that the EU regulation lacks provisions for reducing consumption, stating that there is "no talk of anything becoming less" (Reuse Workshop 2023).

Objectives and strategies

While interviewees deem viable business models which are focused on reuse, repair, and refurbishment, they underline that a fundamental transformation of the economic system is necessary for the success of such models (E7, E16, E17, E19, E20). Ultimately, companies must transition to service-based models, recognising that growth-driven economic models are unsustainable (E20). Many envision a conviviality-oriented and community-based service model for electronic devices, coupled with the democratisation of hardware and software so as to reduce the number of (new) devices and extend the lifespan of existing devices (E7, E16, E17, E19, E20). A notable example is Commown, a cooperative which rents out fair-trade and ecological electronic devices and offers accessible repair services and spare parts. The cooperative avoids expanding in order to minimise transportation impacts but welcomes collaboration with like-minded entities. Representatives of Commown participated in discussions on a repair-

ability index at the EU level but were outnumbered by larger industry representatives (E17), who argued that intellectual property rights must be protected and who instead favour professional repairs (European Parliamentary Research Service 2022).

Sufficiency advocates are pushing for regulation on the EU level that would require manufacturers and retailers to support affordable repairs. They want to help independent repairers, refurbishers, and everyday people who want to fix their own items. Their demands include banning the destruction of unsold electronics, ensuring fair prices for spare parts, making repair information available, and stopping software that prevents repairs (Right to Repair Europe 2024b). Independent providers play a crucial role in extending the life of products and in promoting refurbished items. The 'product as a service' model used by manufacturers is not always sustainable, as it can weaken the potential for repair. Manufacturers should not have sole control over product lifecycles, especially when it comes to software, which acts as the "digital key" of a product (Free ICT Europe 2022).

4. Imagining a transformation?

Our empirical interview material on the three imaginaries showcases how they overlap and diverge, ultimately helping us understand dominant strands of, but also nuances in, current debates on e-waste. A fundamental distinction between the imaginaries can be drawn in terms of what is considered a priority, both in terms of action and desired outcome. Recycling focuses on the development of technologies to enhance the efficiency of the recycling process. Circularity is primarily concerned with both the redesign of products and with increasing corporate responsibility for the retrieval of goods from consumers. Sufficiency emphasises the reduction of consumption, while also building upon the principles of circularity, particularly in relation to repair. The interviews provided rich insights into the imagined needs or desires for transformation in the e-waste sector. This was especially apparent in terms of the 1) perceived actor constellations, assigned responsibility and (decision-making) power; 2) the related motivation that could bring about change and that accordingly prescribes

possible next steps; and 3) the overarching goal that was implicitly or explicitly at the heart of the imaginary.

Firstly, the imaginaries differ significantly in how they assign responsibility and decision-making power. While all three imaginaries perceive multiple actors as both contributing to the problem and potentially driving transformation, the emphasis differs. **Recycling** frames consumers as key actors through their disposal behaviours, while transformation largely hinges on technological innovation led by R&D and producers. Investors are seen as important enablers through the allocation of capital toward new recycling technologies. The EU and nation states play a regulatory role, ensuring compliance and efficiency in recycling systems. In this imaginary, agency lies primarily with technology developers, corporations, and regulators. **Circularity** shifts more responsibility to producers, who are expected to redesign products and establish take-back systems. Consumers also play a role, but mostly as participants in company-driven systems (e.g. return schemes). Legislators are powerful actors, as extended producer responsibility requires strong legal backing. The imaginary presumes that businesses will act if incentivised or compelled, indicating that change is possible within existing market logics. **Sufficiency**, in contrast, disperses agency more widely. Civil society, grassroots movements, and consumers-as-repairers are central, with an emphasis on reducing dependency on producers and centralised systems. Power is redistributed away from corporations and toward individuals and communities. Legislation is still important but is seen more as an enabler of systemic shifts (e.g. right-to-repair laws).

It is important to recognise that these different assignments of agency are not merely analytical differences but reflect real structural power relations. Large hardware producers and their associations command significantly greater lobbying resources and institutional access than repair cooperatives or environmental NGOs. As our interviews showed, when actors such as Commown participate in EU-level consultations, they are structurally outnumbered by industry representatives (E17). The circularity imaginary, while appearing more transformative than recycling, is in practice often shaped by the same corporate actors who benefit from the status quo, directing circularity toward forms that maintain their market control (e.g. manufacturer-controlled take-back and repair systems).

The motivation for transformation is similarly divergent across the imaginaries, closely tied to different diagnoses of the status quo and what needs to change. In the **recycling imaginary**, technological optimisation and resource efficiency are primary drivers. Change is framed as necessary to increase recovery rates, reduce landfill waste, and improve profitability – especially through better recovery of critical raw materials. This motivation operates within existing growth paradigms: the goal is to continue producing and consuming, but more efficiently. The **circularity imaginary** is motivated by the need to correct market failures and internalise environmental costs. This imaginary challenges the design and consumption practices that lead to early obsolescence and poor recyclability. However, it still relies on profitability and competitiveness as key levers, assuming that companies will change if the market or regulation pushes them in that direction. This motivation leads to calls for better product standards and collaborative producer responsibility. The **sufficiency imaginary** presents a more fundamental critique, motivated by the recognition that endless material growth is unsustainable. It is driven by systemic concerns, including environmental limits, entropy, and the socio-economic impacts of overconsumption. Transformation is not about doing the same things better, but about consuming and producing less. The imagined next steps include support for repair cultures, legal frameworks enabling consumer rights to repair, and fostering local, small-scale alternatives to mass production. In short, while recycling and circularity aim to optimise or redirect existing systems, sufficiency calls for redefining them altogether.

Three concrete conflict lines emerge from this analysis. First, there is a fundamental tension between profit-driven growth models and reduction goals: recycling and circularity both operate within the logic of continued growth, while sufficiency requires absolute reductions in material throughput. This tension is not merely theoretical but manifests itself in concrete policy debates around the Ecodesign for Sustainable Products Regulation. Second, there is a conflict over who controls product lifecycles: manufacturers seek to maintain control through proprietary repair systems, software locks, and take-back schemes, while sufficiency advocates demand open access to repair information, spare parts, and software. This conflict is exemplified by the debates around the Right to Repair

directive and the role of software as a "digital key" (Free ICT Europe 2022). Third, there is a structural conflict between large-scale industrial recycling operations, which require economies of scale and capital-intensive infrastructure, and decentralised, community-based repair economies, which operate at local or regional scales with fundamentally different organisational logics. These conflict lines are closely related to different organisational types and geographical scales. Stock market-capitalised corporations operate globally, optimising for shareholder returns and economies of scale. Their engagement with circularity tends toward forms that maintain centralised control and global supply chain integration. Cooperatives such as Commown, by contrast, operate at local or regional scales. Thus, repairing at local or regional scales would also need smaller, community-embedded production networks that prioritise geographical proximity and democratic governance, enabling shorter material loops and responsiveness to local needs.

While the similarities or communalities between the imaginaries tend to point to shared understandings of (current) limitations at the system levels, fundamental differences become apparent in negotiating how or if these limitations might be overcome in the current system. The conflict lines we were able to identify demonstrate that the imaginaries are not merely different perspectives on the same problem but reflect fundamentally different modes of organising economic life. Truly transformative change in the e-waste sector will require moving beyond optimisation, daring to challenge the growth imperatives that underpin production and consumption, and confronting the root causes of e-waste and the globalised inequalities they (re)produce. Understanding common imaginaries around e-waste is a first step in identifying new and perhaps uncommon potential alliances for such transformative change alongside fundamentally opposed ways of imagining the contemporary world and its future.

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Appendix

Respondent	Institution Type	Located in
E1	Local Government Waste Expert	Germany
E2	Researcher Material Recovery	Netherlands
E3	Researcher Waste Management	Austria
E4	Manufacturer Association Representative	Germany
E5	Market Surveillance and Standardisation	Germany
E6	Researcher Recycling Technology	Austria
E7	Social Repair Company	Austria
E8	Government Advisor Sustainable Waste Management	Germany
E9	Recycler (Plastics)	Austria, with branches in Hungary, Czech Republic, Romania
E10	Recycler (Critical Raw Materials)	Belgium, with global branches
E11	Hardware Producer	Germany, with global branches
E12	Hardware Producer	Germany, with global branches

Respondent	Institution Type	Located in
E13	Producer Responsibility Organisation	Austria
E14	Recycler	Austria, with branches in Hungary, Czech Republic, Slovenia
E15	Federal Ministry Waste Management Expert	Austria
E16	Repair and Reuse Network	Austria
E17	Collective for Sustainable Electronics	France, with branches in Belgium, Germany, Austria
E18	Researcher Sustainable Production and Recycling Technologies	Austria
E19	Reuse and IT Company	Germany, Austria, France, Switzerland, Slovakia
E20	Federal Ministry Ecodesign Expert	Austria

Table 1. Overview of interviewed experts with institution type and location. All Interviews were conducted in 2022

References

Baldé, Cornelis/Kuehr, Ruediger/Yamamoto, Tales et al. (2024): The Global E-waste Monitor. Geneva/Bonn: UNITAR, ITU.

Baldé, Cornelis/D'Angelo, Elena/Luda, Vittoria/Deubzer, Otmar/Kuehr, Ruediger (2022): Global Transboundary E-waste Flows Monitor - 2022. Bonn: United Nations Institute for Training and Research (UNITAR).

Borthakur, Anwesha (2020): Policy approaches on e-waste in the emerging economies: A review of the existing governance with special reference to India

and South Africa. In: Journal of Cleaner Production 252, 119885. https://doi.org/10.1016/j.jclepro.2019.119885
Crang, Mike/Hughes, Alex/Gregson, Nicky/Norris, Lucy/Ahamed, Farid (2013): Rethinking governance and value in commodity chains through global recycling networks. In: Transactions of the Institute of British Geographers 38 (1), 12-24. https://doi.org/10.1111/j.1475-5661.2012.00515.x
Dorn, Felix Malte (2024): Towards a multi-color hydrogen production network? Competing imaginaries of development in northern Patagonia, Argentina. In: Energy Research & Social Science 110, 103457. https://doi.org/10.1016/j.erss.2024.103457
European Commission (EC) (2025): Circular Economy Act. Brussels: European Commission. https://environment.ec.europa.eu/news/commission-launches-consultation-upcoming-circular-economy-act-2025-08-01_en, 15.6.2026.
European Commission (EC) (2024a): Ecodesign for Sustainable Products Regulation (Regulation (EU) 2024/1781 of the European Parliament and of the Council of 13 June 2024). Official Journal of the European Union L 1781/28.6.2024. Brussels: European Commission. https://eur-lex.europa.eu/eli/reg/2024/1781/2024-06-28, 15.6.2026.
European Commission (EC) (2024b): Directive on Common Rules Promoting the Repair of Goods (Directive (EU) 2024/1799 of the European Parliament and of the Council of 13 June 2024). Official Journal of the European Union L 1799/10.7.2024. Brussels: European Commission. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32024L1799, 15.6.2026.
European Commission (EC) (2022): Sustainable Products Initiative. Proposal for a Regulation on Ecodesign for Sustainable Products (COM(2022) 142 final). Feedback and statistics on the consultation. Brussels: European Commission. https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12567-Sustainable-products-initiative_en, 12.6.2026.
European Commission (EC) (2002): Directive on Waste from Electrical and Electronic Equipment (Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003). Official Journal of the European Union L 96/13/02.2003. Brussels: European Commission. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32002L0096, 12.6.2026.
European Environment Bureau (EEB) (2022): Most EU Member States miss Collection Target for Electronic Waste. NGOs Demand Quick Action from European Commission. Policy Brief. Brussels: European Environment Bureau. https://eeb.org/en_gb/eu-miss-collection-target-for-electronic-waste/, 11.3.2022.
European Parliamentary Research Service (2022): Right to Repair. Briefing. PE 698.869. Luxembourg: European Parliament. www.europarl.europa.eu/RegData/etudes/BRIE/, 12.6.2026.
Eurostat (2024): Waste Statistics - Electrical and Electronic Equipment (WEEE). Luxembourg: Statistical Office of the European Communities. https://ec.europa.eu/eurostat/cache/metadata/en/env_waseele_esms.htm, 12.6.2026.
Eurostat (2022): Waste Statistics - Electrical and Electronic Equipment. Data Collection and Reporting Framework. Luxembourg: Statistical Office of the

European Communities. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Waste_statistics_-_electrical_and_electronic_equipment_(WEEE), 12.6.2026.
Forti, Vanessa/Baldé, Cornelis Peter/Kuehr, Ruediger/Bel, Garam (2020): The Global E-waste Monitor 2020. Quantities, flows, and the circular economy potential. Bonn/Geneva/Rotterdam: United Nations University (UNU)/United Nations Institute for Training and Research (UNITAR), International Telecommunication Union (ITU) & International Solid Waste Association (ISWA). www.itu.int/en/itu-d/environment/documents/toolbox/gem_2020_def.pdf, 4.6.2026.
Free ICT Europe (2022): Response Free ICT Europe to the ESPR consultation. Netherlands. https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12567-Sustainable-products-initiative/F3317113_en, 22.6.2022.
Herod, Paul/Pickren, George/Rainnie, Allan/McGrath Champ, Séan (2014): Global Destruction Networks, Labour and Waste. In: Journal of Economic Geography 14 (2), 421-41. https://doi.org/10.1093/jeg/lbt015
Ilankoon, Saman/Ghorbani, Yousef/Chong, Meng Nan/Herath, Gamini/Moyo, Thandazile/Petersen, Jochen (2018): E-waste in the international context – A review of trade flows, regulations, hazards, waste management strategies and technologies for value recovery. In: Waste Management 82, 258-275. https://doi.org/10.1016/j.wasman.2018.10.018
Jaeger-Erben, Melanie/Frick, Vivian/Hipp, Tamina (2021): Why do users (not) repair their devices? A study of the predictors of repair practices. In: Journal of Cleaner Production 286, 125382. https://doi.org/10.1016/j.jclepro.2020.125382
Jasanoff, Sheila/Kim, Sang-Hyun (2015): Dreamscapes of modernity: sociotechnical imaginaries and the fabrication of power. Chicago: The University of Chicago Press. https://doi.org/10.7208/chicago/9780226276663.001.0001
Kama, Kärg (2015): Circling the economy: resource-making and marketization in EU electronic waste policy: Circling the economy. In: Area 47 (1), 16-23. https://doi.org/10.1111/area.12143
Kovacic, Zora/Strand, Roger/Völker, Thomas (2020): The circular economy in Europe: critical perspectives on policies and imaginaries. Routledge explorations in sustainability and governance. New York: Routledge. https://doi.org/10.4324/9780429061028
Laser, Stefan/Schlitz, Nicolas (2019): Facing Frictions: Waste and Globalised Inequalities. In: Journal für Entwicklungspolitik 35 (2/3), 5-32. https://doi.org/10.20446/JEP-2414-3197-35-2-5
Leclerc, Stéphanie/Badami, Madhav (2024): Extended producer responsibility: An empirical investigation into municipalities' contributions to and perspectives on e-waste management. In: Environmental Policy and Governance 34 (2), 111-124. https://doi.org/10.1002/eet.2059
Lefstad, Lina/Allesson, Jonas/Busch, Henner/Carton, Wim (2024): Burying problems? Imaginaries of carbon capture and storage in Scandinavia. In: Energy Research & Social Science 113, 103564. https://doi.org/10.1016/j.erss.2024.103564

Lepawsky, Josh (2018): Reassembling rubbish: worlding electronic waste. Cambridge: MIT Press. https://doi.org/10.7551/mitpress/11111.001.0001
Lepawsky, Josh (2020): Sources and Streams of Electronic Waste. In: One Earth 3 (1), 13-16. https://doi.org/10.1016/j.oneear.2020.07.001
Levy, David/Spicer, André (2013): Contested imaginaries and the cultural political economy of climate change. In: Organization 20 (5), 659-678. https://doi.org/10.1177/1350508413489816
Manhart, Andreas (2011): International Cooperation for Metal Recycling from Waste Electrical and Electronic Equipment: An Assessment of the "Best-of-Two-Worlds" Approach. In: Journal of Industrial Ecology 15 (1), 13-30. https://doi.org/10.1111/j.1530-9290.2010.00307.x
Mutter, Amelia (2019): Mobilizing sociotechnical imaginaries of fossil-free futures – Electricity and biogas in public transport in Linköping, Sweden. In: Energy Research & Social Science 49, 1-9. https://doi.org/10.1016/j.erss.2018.10.025
Parajuly, Keshav/Kuehr, Ruediger/Awasthi, Abhishek Kumar/Fitzpatrick, Colin/Lepawsky, Josh/Smith, Elisabeth/Widmer, Rolf/Zeng, Xianlai (2019): Future E-waste Scenarios. StEP (Bonn), UNU ViE-SCYCLE (Bonn) & UNEP IETC (Osaka). https://collections.unu.edu/eserv/UNU:7440/FUTURE_E-WASTE_SCENARIOS_UNU_190829_low_screen.pdf, 27.4.2026.
Pichler, Melanie/Bärnthaler, Richard/Wiedenhofer, Dominik/Roux, Nicolas/Gingrich, Simone (2025): Conceptualizing supply- and demand-side climate change mitigation: A typology and new research directions. In: Energy Research & Social Science 127, 104225. https://doi.org/10.1016/j.erss.2025.104225
Right to Repair Europe (2024a): Analysis of the adopted Directive on Common Rules Promoting the Repair of Goods. https://repair.eu/news/analysis-of-the-adopted-directive-on-common-rules-promoting-the-repair-of-goods/, 9.10.2024.
Right to Repair Europe (2024b): New Ecodesign for Sustainable Products Regulation (ESPR) – What does it mean for Repair? https://repair.eu/news/new-ecodesign-for-sustainable-products-regulation-espr-what-does-it-mean-for-repair/, 20.6.2024.
Salhofer, Stefan/Steuer, Benjamin/Ramusch, Roland/Beigl, Peter (2016): WEEE management in Europe and China – A comparison. In: Waste Management 57, 27-35. https://doi.org/10.1016/j.wasman.2015.11.014
Sandez, Sonia/Ibáñez-Forés, Valeria/Pérez-Belis, Victoria/Juan, Pablo/Bovea, María D. (2023): Consumer practices regarding the purchase, use, willingness to repair, and disposal of small electric and electronic equipment: A Spanish survey on kettles. In: Journal of Industrial Ecology 27 (6), 1613-1625. https://doi.org/10.1111/jiec.13444
Schlitz, Nicolas (2020): At the Margins – Economic Geographies of Waste & Recycling. Dissertation, Universität Osnabrück. https://osnadocs.ub.uni-osnabrueck.de/bitstream/urn:nbn:de:gbv:700-202009253584/7/thesis_schlitz.pdf, 27.4.2026.
Schneider, Anselm (2020): Bound to Fail? Exploring the Systemic Pathologies of CSR and their Implications for CSR Research. In: Business & Society 59 (7), 1303-1338. https://doi.org/10.1177/0007650319856616

Shahabuddin, Ahmmad/Uddin, Mohammad Nur/Chowdhury, Jahirul Iqbal/Ahmed, Saleem Farooq/Uddin, Mohammad Noor/Mofijur, Mohammad/Uddin, Mohammad Abdus (2022): A review of the recent development, challenges, and opportunities of electronic waste (e-waste). In: International Journal of Environmental Science and Technology 20, 4513-4520. https://doi.org/10.1007/s13762-022-04274-w

Soesanto, Hari/Maarif, Syamsul/Anwar, Syaiful/Yurianto, Yurianto (2023): Current Trend, Future Direction, and Enablers of e-Waste Management: Bibliometric Analysis and Literature Review. In: Polish Journal of Environmental Studies 32 (4), 3455-3465. https://doi.org/10.15244/pjoes/163607

Sovacool, Benjamin (2019): Toxic transitions in the lifecycle externalities of a digital society: The complex afterlives of electronic waste in Ghana. In: Resources Policy 64, 101459. https://doi.org/10.1016/j.resourpol.2019.101459

Sovacool, Benjamin/Hess, David/Amir, Sulfikar et al. (2020): Sociotechnical agendas: Reviewing future directions for energy and climate research. In: Energy Research & Social Science 70, 101617. https://doi.org/10.1016/j.erss.2020.101617

Sum, Ngai-Ling/Jessop, Bob (2013): Towards a cultural political economy: putting culture in its place in political economy. Cheltenham: Edward Elgar. https://doi.org/10.4337/9780857930712.00012

Theis, Nicholas (2021): The Global Trade in E-Waste: A Network Approach. In: Environmental Sociology 7 (1), 76-89. https://doi.org/10.1080/23251042.2020.1824308

Torres, Itzell/Niewöhner, Jörg (2023): Whose energy sovereignty? Competing imaginaries of Mexico's energy future. In: Energy Research & Social Science 96, 102919. https://doi.org/10.1016/j.erss.2022.102919

Abstract *Recycling allein kann das wachsende Elektroschrott-Problem nicht lösen, da steigende Produktion und geplante Obsoleszenz Erfolge in der Rückgewinnung übersteigen. Trotz Fortschritten der EU in der Recyclingpolitik bestehen strukturelle Grenzen. Basierend auf zwanzig Expert*inneninterviews unterscheidet dieser Beitrag drei* imaginaries *der Zukunft von Elektroschrott: Recycling, Zirkularität und Suffizienz. Er argumentiert, dass transformativer Wandel im Abfallsektor über die Optimierung bestehender Systeme hinausgehen und die Wachstumsimperative sowie die damit verbundenen globalisierten Ungleichheiten in Frage stellen muss.*

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