

A visual scoping review of plastic consumption in everyday life

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ABSTRACT

This scoping literature review aimed to understand state-of-the-art knowledge about plastic consumption in the context of daily life by identifying controversies and interventions addressed in the reviewed articles. First, we reviewed articles based on theoretical approaches, methodologies, and country contexts. Second, using a concept map, we analyzed key concepts and dilemmas inherent in plastic consumption, highlighting its complexity. Third, we identified various approaches to interventions for reducing plastic consumption, along with stakeholders' perceived responsibilities to initiate and implement these changes. We found that in the existing research, behavioral studies are central to the investigations of plastic consumption and primarily focus on single-use plastic products (SUPs), yet within a very narrow scope of product variation. Hence, much of the existing research concentrates on a narrow subset of SUP items, while other significant SUPs and consumer products remain underexplored. We argue that the challenges associated with plastics extend far beyond individual behaviors related to specific products and materials. Finally, we identified research gaps and proposed future studies to expand the scope of plastic products covered, adopt systemic approaches to plastic consumption dilemmas, and explore relational and holistic perspectives beyond disciplinary norms. Drawing on the research-policy nexus on plastic consumption, we emphasize the importance of critically reflecting on how knowledge is produced and applied in policymaking. To achieve just and sustainable transitions, policymakers should prioritize equitable solutions that do not disproportionately burden specific stakeholders, such as consumers, while holding all relevant parties accountable.

1. Introduction

Plastics have seamlessly diffused into every aspect of our surroundings, filling our daily lives with a myriad of plastic products in various forms. Plastic products have manifested their tangible presence in domestic activities, thus becoming fundamental components in household practices associated with hygiene, comfort, storage, food, and children's upbringing (Shittu, 2021; Liu et al., 2024). The characteristics of plastics, such as being lightweight, flexible, and cost-effective, contribute to their widespread usage, resulting in a noticeable increase in the overall plastic consumption (Geyer et al., 2017; Mortensen et al., 2021).

Although the benefits of plastic products are acknowledged, their environmental and health-related consequences are also widely discussed (Heidbreder et al., 2019; Stanton et al., 2021; Liu et al., 2024). For instance, plastic production and consumption negatively affect nature by contaminating marine habitats and raising concerns about human health (Thompson et al., 2009) particularly in the form of microplastics (Bostan et al., 2023). Studies focused on the

environmental aspect of plastic production and consumption have highlighted the dangers of the accumulation of plastic debris, which persist in the environment for hundreds of years, significantly impacting environmental resilience and the ability to provide critical ecosystem services (Miller et al., 2019).

For individuals striving to adopt sustainable practices, the transition is complex. It is challenging to understand the outcomes of the associated dilemmas and controversies that are connected to personal consumption, which may lead to confusion. In addition, sustainable alternatives are often more costly and rely on connecting with different layers of various existent practices and resources (Müller, 2024). Therefore, navigating this complex and contradictory context, individuals may rely on the positive characteristics of plastics to rationalize their negative aspects (Löfström et al., 2021). However, the complexity of plastic consumption is not limited to individual consumers alone; it also applies to various stakeholders such as governmental organizations, companies, and local organizations. The SYSTEMIQ (2022) report emphasized that since the economic,

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environmental, and social implications of various pathways are frequently unclear, it can be challenging to decide which actions should be prioritized for various plastic applications or to comprehend the synergies between different solutions, even though many stakeholders want to take meaningful action.

From a research perspective, the plastics dilemma, which involves the environmental, social, and economic challenges posed by plastic production, consumption, and waste, has gained attention in recent years across various disciplines, each examining the topic from different viewpoints. In existing research, behavioral studies are central to these investigations, seeking to understand how individuals' behavior related to products, services, and resources can be explained by the logic of the psyche, how these behaviors impact the environment, and how they can be altered. The research perspective of linking the examination of behavior to *some-thing* originates from behavioral psychology (Ajzen and Fishbein, 1980; Ajzen, 1991; Kahneman, 1992), and, since the early 2000s, has been adopted into various strands of Design for Sustainability, including cradle to cradle framework (McDonough and Braungart, 2002) and Design for Sustainable Behaviour (Zachrisson and Boks, 2012). Life Cycle Assessment (LCA) has been used to define system boundaries to assess the environmental impacts of plastic production and consumption by factors such as climate change, ozone depletion, acidification, eutrophication, water and land use, and resource depletion. Typical boundaries include production, use, and end-of-life, analyzed through material and energy flows resulting in an environmental footprint assessment of a product. Solutions to the challenges identified in LCA may involve considering allocation principles, such as recycling, reuse, and reduction, as well as behavioral change, material substitution and other approaches.

Despite the valuable contributions of these approaches, the challenges associated with plastics extend far beyond individual behaviors related to specific products and its connection to environmental assessments. The problems associated with plastics spread in many layers of the world through different kinds of tangled networks consisting of production, market, social interaction, culture and more, posing challenges to different areas of sustainability (Müller, 2024; Åberg and Greene, 2024). In response to these challenges, the European Union's (EU) ongoing policy discussions around circular economy has a relatively holistic perspective, aiming to consider multiple aspects of the transition to circularity (Calisto Friant et al., 2021). However, the outcomes of these discussions often result in end-of-pipe solutions, rather than addressing the root causes. For instance, the new EU directive, Ecodesign for Sustainable Products Regulation (Regulation 1781/2024), and circular economy policies currently describe a "technocentric circular economy focus" (Calisto Friant et al., 2021). Consequently, the deeper socio-ecological implications of transitioning to a circular economy—such as changes in consumption patterns, resource extraction, or social equity—remain insufficiently addressed (Calisto Friant et al., 2021). Problems are thus understood as isolated instances that will cease to occur when the product or service and their related behavior is changed.

Another notable limitation in current plastic consumption research is its predominant focus on single-use plastics (SUPs). Certain SUPs such as plastic bags and bottles have become the subjects of numerous studies and policy regulations. While the significant impact of these SUPs is acknowledged, discussions should include various types of plastics (Borg et al., 2022). As noted by Heidbreder et al. (2019), social scientific research has mostly neglected plastic applications other than packaging or bags. The actual scope and volume of plastics in daily life can be recognized by extending the product types included in plastic consumption research.

Accordingly, the *REDUCE – rethinking everyday plastics* (reduce.oslomet.no) research project, of which this study is part, targets plastic consumption in daily life contexts to investigate the potential reductions in plastics consumption in everyday life. The aim of this scoping literature review is to understand state-of-the-art knowledge about plastic

consumption in the context of daily life by identifying controversies and interventions addressed in the reviewed articles.

The research questions for this study are as follows: (1) What are the dominant discussions, controversies, and research gaps in plastic consumption research? (2) How is the discussion framed regarding changing plastic consumption and the associated responsibilities of implementing these interventions? The discussion that emerged from these research questions provides observations from the literature on plastic consumption. To investigate the complexity of plastic consumption, we adopted a relational approach (Walsh et al., 2021) and examined the current themes of discussion. Hence, this article offers a critical discussion of plastic consumption, a research field often dominated by a focus on specific plastic products such as straws, bags, or other SUPs, and significantly influenced by specific academic disciplines such as the behavioral sciences. In addition, this article contextualizes plastic consumption topics in relation to the broader sustainable consumption discussions (e.g., behavior change, distribution of responsibility, and individual versus collective action) in the reviewed articles.

The paper is structured as follows: in Section 2, we explain the methods used in conducting this review. This is followed by Section 3, where the analysis of selected articles is presented according to theoretical approaches, methodologies, and country-based studies; Section 4, focusing on a relational exploration of thematic results based on the identified key concepts in plastic consumption; and Section 5, describing change discourses in the context of plastic consumption. In Section 6, we reflect on the results, and in Section 7, we describe the research and policy implications and suggest future studies.

2. Methodology

2.1. Search and selection of articles

Scoping reviews aim to identify the main studies on a selected subject, determine the conceptual limits and size of a field of study, and identify research gaps (Xiao and Watson, 2019; Booth et al., 2012). For this scoping review, the search was conducted in Scopus and Web of Science, which are well-known databases for including interdisciplinary studies (Booth et al., 2012). As a starting point to examine the area of plastic consumption, the term *plastic consumption* was searched, including its variations such as *consumption of plastics*. The language was limited to English peer-reviewed journal articles published within the last 5 years (2018–2022). Publication date restrictions were set for the last 5 years to include up-to-date research in the field of plastic consumption. In the screening phase of the results, articles with the best fit to address the research questions were selected. Articles that did not mention plastic consumption as a central discussion topic were excluded. In addition, articles that adopted technical and chemical approaches to polymer features of plastics were not included in the review. Finally, the list of selected articles was extended by snowballing and checking reference lists while keeping the limitations in language, publication date, and articles in peer-reviewed journals, as in the initial search. The final list for the scoping review consisted of 84 articles.

2.2. Analysis of the articles through a concept map

The selected articles were analyzed using a concept map which enabled a reflective, relational, and explorative approach. Concept mapping is a graphical tool used to structure, elicit and represent knowledge to understand a new subject (Wheeldon and Åhlberg, 2012; Hanger-Kopp et al., 2024), as it helps identify key concepts and their connections, particularly for visually minded researchers (Booth et al., 2012). Wheeldon and Åhlberg (2012) highlighted that making decisions on how concepts relate to each other is necessary for developing concept maps, and these decisions enable researchers to recognize the connections, reflect on the significance of how these concepts are arranged, and

evaluate the hierarchical and multidimensional levels of various kinds of linkages. Accordingly, we created a visual map that can be used as a concept map. Similar approaches to using visualization in literature review articles, such as concept maps and mind maps were applied by Blizzard and Klotz (2012), Garza-Reyes (2015), and Cowan and Tiller (2021) to organize and display findings by categorizing articles based on thematic focus to highlight research concentrations and gaps, with subdivisions and cross-links illustrating relationships between concepts.

For the analysis of the results, a concept map was created with the 84 selected articles (see Fig. 1). In the concept map, the analyzed articles were coded, providing a visual representation of the field mapping. Before explaining the stages of developing the concept map, we explain the terminology we employed. We used the term *concept* to denote the topics in the various sections of the reviewed articles (e.g., title, abstract, and keywords). These concepts gradually emerged during the iterative process of map creation. The term *key concept* was utilized to identify certain concepts that recurred in at least more than five of the reviewed articles. In addition, a deliberate distinction is drawn between the links and the interpreted links. As the concepts were directly derived from the articles, the link between an article and a concept was considered evident, whereas the links that connected concepts were based on the analysis of the articles and are thus referred to as interpreted links. The examples and reflections related to the selections of these concepts and key concepts will be elaborated later in this section. First, the stages involved in creating the concept map are outlined as follows:

1. **Connecting the articles to the concepts:** The articles and the corresponding concepts they addressed were placed on the map, illustrating the connections between them. In Fig. 2, we exemplify how a single concept is linked to numerous articles, and another example shows how one article is associated with multiple concepts.
2. **Identification of key concepts:** Concepts that demonstrated a substantial number of connections with the articles were highlighted as key concepts.

3. **Connecting the concepts:** If a concept was discussed in relation to other concepts in the reviewed articles, interpreted links between the concepts were added to the map.
4. **Adding comments and insights:** In parallel to the other stages, comments and insights related to the articles and concepts were integrated into the map.

Throughout the development of the map, specific sections of the map were zoomed in for a more in-depth analysis. For instance, after the creation and iterative refining of the concept map, relevant passages from the reviewed articles were incorporated into the relational concept map. As researchers with a design background, we approached the concept map as an explorative and iterative process rather than rigid, sequential steps. Although this approach provided a space for creativity and flexibility, we, as researchers, influenced the data examined (Krippendorff, 2007) and acknowledged the validity of diverse interpretations and versions. In spite of this challenge, we embraced the dynamic nature of the map and chose to conclude the process at a maturation point.

Once the concept mapping was stabilized, we organized the content into a Microsoft Excel spreadsheet, including article details (author, title, publication year, and journal) and connected key concepts. Then, we conducted a second round of analysis to identify theoretical approaches, methodologies, and the countries or regions covered in the reviewed articles, as presented in Section 3.

3. Characteristics of the reviewed articles: Theories, methods, and countries covered

This section provides an overview of the theoretical approaches, methodologies, and countries or regions covered in the reviewed articles, summarizing the key highlights. Various theoretical approaches have been employed to investigate plastic consumption, with behavioral science as one particular approach that consistently stands out across all approaches. Notably, behavioral science approaches accounted for nearly one-third of the reviewed articles. In this category, studies on pro-

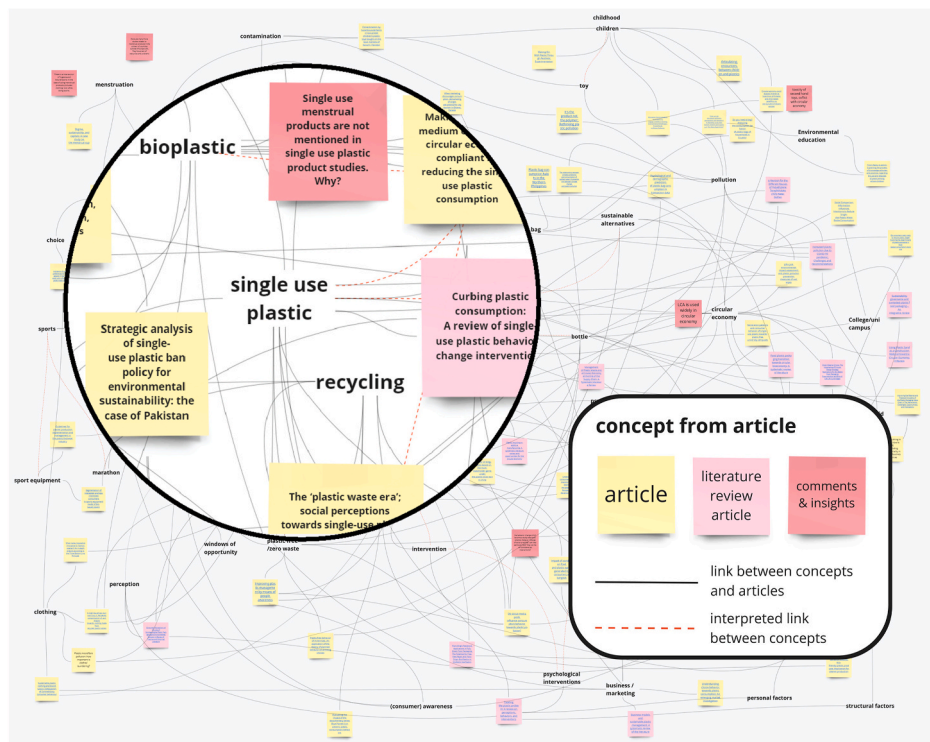


Fig. 1. Visual impression of the concept map.

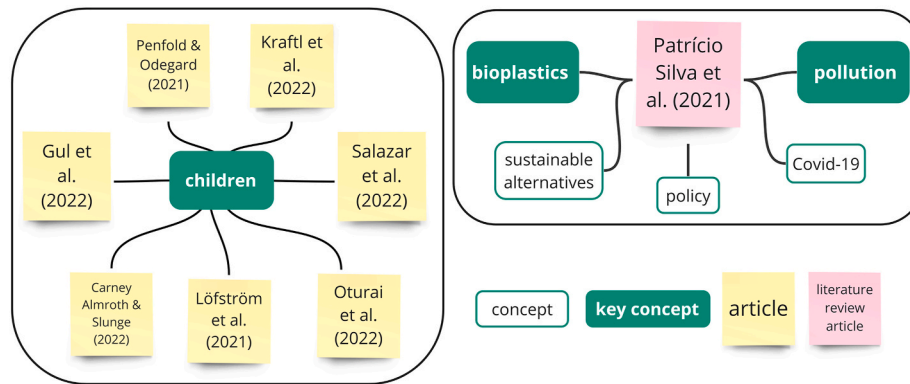


Fig. 2. The visual on the left focuses on the children as a key concept and on the related articles. The visual on the right focuses on the literature review article by Patricio Silva et al. (2021) and its connections to various key concepts and concepts.

environmental behavior were prominent (Kautish et al., 2021; Heidbreder et al., 2022; Salazar et al., 2022; Widayat et al., 2022). Other behavioral science approaches included the Theory of Planned Behavior applied to plastic-free drinking (Raimondo et al., 2022) and the impact of documentary series (Dunn et al., 2020) and social media posts (Rapada et al., 2021) on plastic consumption behaviors, ethical consumption behavior toward eco-friendly plastic products (Chi, 2022), and choice behavior related to plastic consumption (Kautish et al., 2021). Lastly, we observed that more than half of the articles that used behavioral science theories focused on SUPs, indicating a significant association between behavioral science theories and this specific type of plastic consumption.

Apart from the behavioral science approach, the studies employed various theories, including feminist theories (Røstvik, 2020; Owen, 2022; Penfold and Odegard, 2021; Kraftl et al., 2022), game theories (Ali et al., 2022; Chen et al., 2021), multilevel perspectives (Beltran et al., 2021), social practice theory (Sattlegger et al., 2020; Evans et al., 2020), multi-criteria decision-making (Ali et al., 2021), and institutional theories (Choudhary et al., 2022).

From a methodological standpoint, the literature reviews comprised one-fourth of the reviewed articles. Among these, half focused on the circular economy approach. The remaining literature reviews delved into specific topics such as plastic food packaging, bioplastics, and waste (Beltran et al., 2021; Kakadellis and Harris, 2020; Markevičiūtė and Varžinskas, 2022b; Hossain et al., 2022). Empirical research studies have employed various methods, with surveys and interviews being the most common. Survey-based articles constituted almost half of all the reviewed articles, primarily associated with behavioral science research (Nguyen et al., 2022; Pham et al., 2022; Lavelle-Hill et al., 2020).

When the articles were reviewed on the basis of the study region, 54 of the 84 selected articles were found to be focused on a particular country or region. Studies that investigated a sample from Germany topped the list with seven articles, followed by those from Italy with five articles and Pakistan with four articles. The topics of the studies from Germany were highly focused on clothing and apparel made of bioplastics (Friedrich, 2021; Klein et al., 2020; Scherer et al., 2018) and plastic packaging (Rhein and Schmid, 2020; Wiefek et al., 2021). The Italy-based studies prominently addressed research on SUPs, particularly plastic bottles (Cavaliere et al., 2020; Chirico et al., 2021; Raimondo et al., 2022). Similarly, studies in Pakistan examined plastic bags and bottles in relation to the SUP ban policy and plastic pollution (Ali et al., 2021, 2022). The reviewed articles also included studies that focused on regions rather than individual countries. One of the most extensive studies was conducted by Babayemi et al. (2019), covering most of the African continent with 33 countries and presenting an evaluation of the mass importation and consumption of plastics and their related pollution potential. In another study, Barbir et al. (2021)

assessed the level of awareness of the direct and indirect effects of plastics on human health across 25 European countries. Meanwhile, Markevičiūtė and Varžinskas (2022a) investigated the potential of bioplastic food packaging in the countries of the Baltic Sea Region.

4. Relational exploration of emerging Themes

Until this point, plastic consumption studies have been presented in terms of the theories, methodologies, and country-specific studies covered in the reviewed articles. This section delves into emerging themes related to the identified key concepts. To begin, Fig. 3 presents the identified key concepts, concepts, and their interpreted links. The distribution of the articles linked to specific concepts, labeled as key concepts, is presented in Fig. 3. For instance, SUPs had the highest connection number, with 32 articles, followed by plastic waste and packaging. The interpreted links between the concepts and key concepts resulted from the analysis of the reviewed articles.

While describing clear boundaries between these key concepts can be challenging, we observed that the literature revealed overlapping yet distinct perspectives. Reflecting the complexity and dynamic nature of these discussions, the boundaries between these concepts are fluid and subject to change. However, our aim in this review was to contextualize these key concepts in relation to each other by creating a cohesive thread. We seek to reveal both the intersecting and separate dimensions of these identified key concepts within the context of this review.

We begin with *single-use plastics* and *plastic packaging*. Although plastic packaging is often considered part of SUPs, we have chosen to treat it as a separate key concept owing to its significant impact and the high number of studies that focused on it. SUPs and packaging are primarily problematized in relation to waste and pollution. While *waste* and *pollution* are often linked to describe the negative effects of plastics, they are approached differently in some articles because they do not always complement each other. For instance, as detailed in Section 4.1, microplastics released from laundering clothing made of plastics contribute to water pollution, which is discussed separately from waste. Gaylarde et al. (2021) emphasized that fabrics made from plastics release microfibers continuously throughout their lifespans, significantly contributing to global microplastic pollution levels. Here, the distinction lies between pollution that emerges during the product use phase and waste at the end of the product use time.

In response to plastic waste and pollution, which are mostly associated with SUPs and packaging, the *circular economy* and *recycling* emerged as solutions to mitigate these issues. Recycling is closely linked to the circular economy framework, which aims to minimize waste through material circulation. However, recycling is also studied independently of its relation to the circular economy framework, for example, from evolutionary perspectives on contamination and

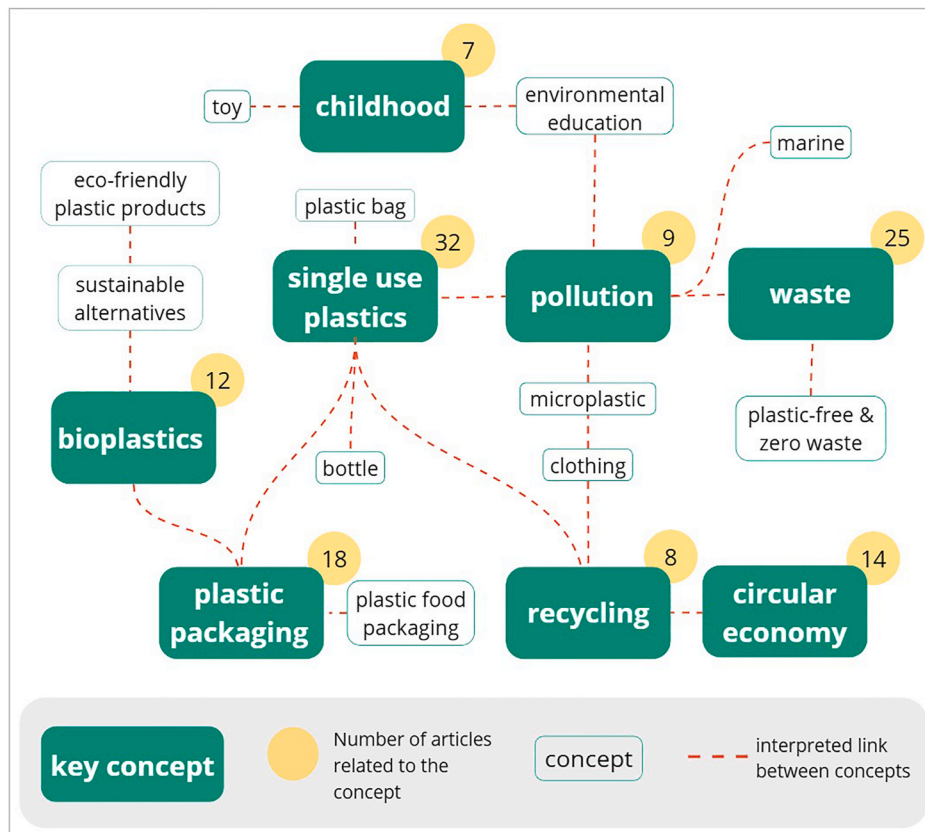


Fig. 3. Illustration of how the identified key concepts and their interpreted links based on the reviewed articles, alongside the distribution of articles associated with each key concept emerged by visual concept mapping. Rather than attempting to capture all concepts and relationships, the figure aims to exemplify some of the most significant connections between key concepts and concepts.

emotions such as disgust toward products made from recycled plastic bottles (Meng and Leary, 2021). In addition to the circular economy and recycling, *bioplastics* have entered discussion as another proposed solution to mitigate the negative impacts of plastics by replacing traditional plastics.

Children play a crucial role in these discussions, both as consumers of plastics and as individuals affected by their negative impacts such as pollution and waste. Given their status as the younger generation with relatively less influence over the system, studies have examined how plastic products meet their diverse needs (Kraftl et al., 2022) and perpetuate a “lock-in” effect within the current system (Löfström et al., 2021).

Table 1 offers an overview of the main results from the reviewed articles, categorized in relation to the key concepts shown in Fig. 3. The main results section of Table 1 includes a summary of each key concept and the relations between these key concepts by demonstrating how they were coupled in different research subjects. Following these threads of key concepts, the next section provides examples from the reviewed articles that highlight the controversies and dilemmas associated with plastic consumption.

4.1. Controversies: tangled in plastics

This section presents the multifaceted nature of plastics and examines how their diverse forms and uses complicate perceptions of them. It addresses the paradoxical views of plastics as both beneficial and harmful, and how these conflicting perceptions influence daily life and consumption decisions. Through various studies, we will see how plastics embody conflicting environmental impacts and policy goals.

4.1.1. Multidimensionality and contradictory perceptions of plastics

Considering the diverse forms, material features, and usage areas, defining and comprehending plastics in the context of daily life can be challenging. While plastics can be classified by technical specifications such as polyethylene terephthalate, high-density polyethylene, and polyvinyl chloride and their pertaining properties such as melting point and density, contextualizing their associations in daily life can be complex. People’s perception of plastics varied, as indicated in the reviewed articles. For instance, Kautish et al. (2021) introduced plastics as a ubiquitous pollutant and expressed people’s changing perception of plastics from a scientific wonder to a sustainability scourge over time. Furthermore, plastics are described as having an elusive, slippery, and multidimensional nature, making them both too large and too small for humans to grasp fully, unlike more straightforward objects (Kraftl et al., 2022). Kraftl et al. (2022) also discussed the meanings attributed to plastics; in a workshop with children, plastic flowers found their place at the top of the plastic sculpture to symbolize the value of plastics, which are considered useless in practice but hold high symbolic meaning in signifying love. This example illustrates the two contradictory faces of plastic flowers as both useless and valuable. In a separate study, Yurtsever (2019) employed contradictory metaphors to describe plastics, portraying them as both a blessing and a curse. According to Yurtsever (2019), despite their acknowledged indisputable benefits to humanity, plastics are also perceived as a source of environmental harm, embodying a paradox of love and hate. These varied perspectives on the materiality and symbolic meaning of plastics contribute to the complexity of the issue.

Concerning SUPs and pollution, the articles highlighted the contradictions arising from the durability and short lifespan of plastic products. Heidbreder et al. (2021) pointed out that the current plastic management practices have an inherent paradox due to the frequent use

Table 1
Summary of the key concepts based on the reviewed articles.

Key Concept	Main Results	Selected References
Single-Use Plastics	One of the most researched subjects in plastic consumption was single-use plastics. Studies on single-use plastics varied in context but were mainly based on behavioral science fields. Plastic bags and bottles received a lot of attention. While a few studies have investigated plastic straws and drinking cups, other types of single-use plastics were mainly neglected.	Makarchev et al. (2022); Macintosh et al. (2020); Ali et al. (2022); Bruchmann et al. (2021); Zambrano-Monserrate and Alejandra Ruano (2020); Heidebreder et al. (2020); Jahani et al. (2019); Khoironi et al. (2019); Van Rensburg et al. (2020); Raab et al. (2022)
Plastic Packaging	Although plastic packaging is part of single-use plastics, it creates its own sub-area, with many articles particularly focusing on plastic packaging. Plastic food packaging was a prominent topic in packaging research and was addressed in various papers concerning alternative solutions to plastics (e.g., bioplastic food packaging), the influence of the COVID-19 pandemic, and online food delivery.	Kakadellis and Harris (2020); Liu et al. (2021); Winton et al. (2022); Wiefek et al. (2021); Çevikarslan et al. (2022); Markevičiūtė and Varžinskas (2022a)
Plastic Waste	Plastic waste studies included municipal and national waste management, waste created by consumers in their homes, and recycling structures. Studies on zero-waste or plastic-free issues were frequently tied to the impact of social media on reducing plastic consumption and waste.	Huang et al., (2022); Hossain et al. (2022); Fogt Jacobsen et al. (2022); Khan et al. (2019); Liu et al. (2021); Demichelis et al. (2019); Ajaj et al. (2022); Bianchini and Rossi (2021); Crowley (2020); Filho et al. (2019)
Plastic Pollution	Plastic pollution was addressed in relation to different subjects such as microplastics, children's environmental education, and climate change and its impact on outdoor recreation by discussing the sources of plastic pollution and its effects on the environment and health.	Salazar et al. (2022); Löfström et al. (2021); Oturai et al. (2022); Gaylarde et al. (2021); Yurtsever (2019); Sun et al. (2020); Zapata (2021); Mugobo et al. (2022)
Circular Economy	The circular economy approach was prominent in the articles on plastic consumption that were included in the literature review. The life cycle assessment method was widely used in studies on the circular economy. The circular economy approach was mainly coupled with plastic food packaging, bioplastics, waste, and recycling topics, and discussed the material aspects of plastics.	Beltran et al. (2021); Kakadellis and Harris (2020); Markevičiūtė and Varžinskas (2022b); Hossain et al. (2022); Alassali et al. (2021); Choudhary et al. (2022); da Silva et al. (2022)
Bioplastics	The term <i>bioplastic</i> covers bio-based plastics, which are derived from biological and renewable resources, and biodegradable plastics, which decompose naturally	Friedrich (2021); Klein et al. (2020); Scherer et al. (2018); Watkin et al. (2020); Patrício Silva et al. (2021); Zhang et al. (2021); Van Roijen and Miller (2022)

Table 1 (continued)

Key Concept	Main Results	Selected References
	in certain conditions. Most studies on bioplastics focused on bio-based plastics, with particular attention paid to clothing and packaging made of bio-based plastics.	
Childhood and Plastics	Childhood in relation to plastics was frequently studied under plastic pollution, environmental education, and health concerns related to the contamination risk of toys. Children's daily encounters with plastic and complex relationships between plastics, children, and the planet were also discussed from the feminist new materialist perspective.	Salazar et al. (2022); Löfström et al. (2021); Oturai et al. (2022); Penfold & Odegard (2021); Kraftl et al. (2022); Almroth and Slunge (2022); Gul et al. (2022); Çevikarslan et al. (2022)
Plastic Recycling	The plastic recycling studies included the perspective of consumer behavior and awareness toward recycling concerning plastic waste management and the material quality aspect of recycled plastics. The use of recycled plastic bottles in clothing was studied in terms of consumers' disgust, perceived contamination, and product sustainability.	Meng and Leary (2021); Kumagai (2021); Alassali et al. (2021); Khan et al. (2019); Demichelis et al. (2019); Cruz Sanchez et al. (2020); Huang et al. (2022); Fogt Jacobsen et al. (2022)

of plastics in single-use products despite the long-living properties of plastics. Supporting this, Borg et al. (2022) stated that the durability characteristic of plastics causes plastic pollution and environmental impacts, considering the short lifespan of SUPs.

Building upon the discourse on the complexities involved in plastic packaging consumption, a study engaged 36 fifth-grade children in a Norwegian primary school in discussions about plastic pollution (Löfström et al., 2021). In this study, the children had both negative and positive attitudes toward plastics, which caused them confusion and mixed emotions. For example, they described the positive aspects of plastic packaging as maintaining the edibility and increasing the shelf life of food longer while indicating its negative aspects as difficulty of avoiding the unnecessary use of a significant amount of food packaging. The children appeared to be struggling with the fact that the use of plastics is difficult to avoid and that positive attributes may be used to justify negative ones (Löfström et al., 2021).

4.1.2. Conflicting environmental impacts of plastics

There are different examples of how the environmental impacts of plastics present conflicting dilemmas, such as in food packaging, recycled plastic products, and the transition to alternative materials like bioplastics. One of the most prominent examples of the conflicting environmental impacts of plastics comes from plastic food packaging. According to Barros et al. (2019), plastic packaging is crucial for both the preservation and distribution of food, but it is also responsible for a significant portion of the current environmental impact. As described in the previous section, this dilemma between preserving food and using SUP packaging has caused confusion to consumers, including children.

Another dilemma pointed out by Meng and Leary (2021) addresses the challenges associated with SUPs, recycling, and pollution, associated with recycled plastic bottles used to produce clothing. The researchers explained that on the one hand, it helps the environment by preventing recyclable materials from ending up in landfills. On the other hand, it

causes pollution in water streams due to the release of microfibers from clothing made of recycled plastic bottles during washing. The researchers suggested that if plastic bottles are to be recycled into consumer goods, they should be used for items such as carrying bags that require minimum cleaning.

Transitioning from conventional plastic packaging to alternative materials such as bioplastics is a controversial topic in plastic consumption research. [Kakadellis and Harris \(2020\)](#) conducted a systematic review to investigate the relationship between food packaging and food waste, utilizing conventional and biodegradable plastic food packaging life-cycle assessments. Their findings revealed a conflicting landscape, indicating that while bioplastics exhibit environmental benefits in terms of global warming potential and nonrenewable energy use, these advantages are often offset by the agricultural resources needed for the production of raw materials for bioplastics. Similarly, another study indicated that bioplastic production has challenges in material development, production scaling, and handling of unfamiliar resource streams such as sugarcane or potato peels ([Dijkstra et al., 2020](#)). These challenges encompass incompatibility with conventional recycling, environmental trade-offs, lower recyclability, and unsustainable raw material sourcing, raising concerns such as greenwashing and production uncertainty. The examination of the reviewed literature indicates the complexity of transitioning to alternative materials. [Beltran et al. \(2021\)](#) suggested that alternatives such as bioplastics are interconnected with various sociotechnical structures such as packaging regulations, biofuel production, and agri-food systems. This highlights the need for a holistic understanding of the transition process.

4.1.3. *Conflicting policy goals, health concerns and convenience*

As we delved deeper into the complexities of plastic consumption, we found another notable example that examined conflicts regarding the circulation of children's products ([Almroth & Slunge, 2022](#)). According to the study, the circularity and nontoxic environmental goals of the European policy are inherently in conflict with one another in the case of reusing old toys, which can expose children to toxic chemicals due to a lack of restrictions related to the use of specific substances in toys and children's products during their production. A question was raised on whether the reuse of old toys and accessories should be promoted in line with the waste hierarchy or whether they should be destroyed and removed from the circular economy ([Almroth & Slunge, 2022](#)). The dilemma regarding the reuse or disposal of old toys highlights the tension between environmental sustainability goals and public health concerns.

Within the domain of plastic packaging and SUPs, [Wiefek et al. \(2021\)](#) highlighted that conflicting priorities and specific personal roles (e.g., parents, employees, and spouses) affect the consumption decisions on plastic packaging, as in the case of parents' choice of buying lightweight plastic bottles for their kids' school bags. In the study, people had difficulty navigating the dilemma of appreciating the lightweight and easy-to-carry features of plastic bottles while being mindful of the possible release of pathogenic plasticizers into beverages ([Wiefek et al., 2021](#)). This study exemplifies the tension between practical considerations and health concerns related to plastics.

5. How to change plastic consumption

In response to the environmental and health consequences of plastic consumption, along with the controversies and dilemmas discussed earlier, scholars have approached the matter from diverse angles, proposing interventions to address the challenges associated with plastic consumption. This section explains how the changes are suggested in plastic consumption across the reviewed articles.

5.1. *Behavior change: drivers and barriers to changing plastic consumption*

In various articles, change was examined in relation to different topics, with behavioral science emerging as the predominant perspective to intervening plastic consumption. In their literature review, [Heidbreder et al. \(2019\)](#) found that sociodemographic variables, environmental attitudes, convenience, context factors, habits, diffusion of responsibility, and social factors affect plastic consumption behavior. Similarly, [Borg et al. \(2022\)](#) discussed behavior change enablers and barriers related to plastics under macro-, meso-, and micro-level factors, in addition to contextual factors described as "health and safety advice/perceptions related to reusables and contamination, operational capacity for accepting and cleaning reusables, and the level of difficulty involved in avoiding different types of single-use plastics" (p. 10). In relation to the degree of effort required to avoid various forms of SUPs, [Borg et al. \(2022\)](#) explained that straws and bags, for instance, were acknowledged as easier to avoid than single-use drink containers and food packing owing to the current prohibitions or the availability of substitutes.

Some articles focused on particular areas of plastic consumption and discussed their drivers and barriers. For example, [Wiefek et al. \(2021\)](#) identified habits, lack of knowledge, hygiene, material properties (e.g., lightness), having other priorities (e.g., parenting), price, availability, diffusion of responsibility, reachability and infrastructure, time and (societal) time structures, convenience, and consumer culture as barriers to plastic-free shopping. Likewise, [Fogt Jacobsen et al. \(2022\)](#) found that environmental concerns and task-specific advantages are the main factors that influence consumers to reduce and recycle their plastic packaging waste, whereas lack of knowledge, the absence of opportunity, inconvenience, and difficulty of the task are the main barriers. Furthermore, [Demichelis et al. \(2019\)](#) suggested that people who want to live a life free of plastic must spend a significant amount of time and energy looking for alternatives and gathering information; thus, these create challenges to a plastic-free lifestyle.

One facilitator of behavior change related to plastic consumption was described as a window of opportunity in the articles. [Löfström et al. \(2021\)](#) addressed the disruptive forces (e.g., natural disasters and pandemics) that can create opportunities to change lifestyles, norms, habits, and behaviors. However, they also highlighted that the changes are frequently in conflict with sustainable goals, rather than being in line with them in those circumstances. [Heidbreder et al. \(2019\)](#) identified windows of opportunities to initiate a habit change when external conditions change, as in the case of moving to another place. Furthermore, they added that when these opportunities cannot be employed, changing situational factors such as offering alternatives can be utilized as a catalyst for new behavior.

5.2. *Systemic and relational approach to intervening in plastic consumption*

In addition to the behavior change approach, studies have suggested a holistic, relational and systemic approach to intervene in plastic consumption. As exemplified in the previous section on controversies surrounding plastics, [Beltran et al. \(2021\)](#) drew attention to the complexity and interconnectedness of systems around plastic packaging and adopted a theoretical transition framework and multilevel perspective to explore the driving forces behind the changes in food plastic packaging regimes. While the transition to a circular bioeconomy in food packaging is driven by factors such as environmental concerns, depleting fossil fuel reserves, sustainable practices, alignment with a circular economy, and policies, the study emphasized that consumer discussions do not revolve around the material (biobased biodegradable plastics) but rather focus on how this innovation reshapes consumer practices within a new sociotechnical system ([Beltran et al., 2021](#)). This involves considerations such as the use of packaging in daily routines (e.g.,

getting coffee during commutes) and supporting mechanisms for waste collection (Beltran et al., 2021).

Similarly, Sundqvist-Andberg and Åkerman (2021) conducted an integrative literature review to identify the challenges in governing the sustainability of plastic food packaging. They highlighted the absence of a critical assessment of the systemic sustainability impacts resulting from various circular economy policy measures concerning diverse sustainability goals. According to the researchers, there is a need to develop systematic tools for anticipatory, future-oriented policy impact evaluation in policy design to prevent unexpected systemic impacts on other parts of the food packaging system.

Drawing from social practice theory, Sattlegger et al. (2020), Evans et al. (2020) and Horne et al. (2022) adopted a socio-technical and relational approach to intervene the plastic consumption considering broader and interconnected contexts. Sattlegger et al. (2020) argue that viewing plastic packaging as part of the food provisioning system shifts the focus from waste management to its role in food supply. They further emphasize that examining these systems in their local and historical contexts can reveal opportunities and challenges for socio-ecological transformation. Similarly, Evans et al. (2020) assert that plastics can only be understood in the context of the broader networks and relations they are embedded in. They argue that changing the use and disposal of plastics requires attention not only to the services provided by plastics but also to the whole picture and wider socio-technical arrangements that cannot be changed by altering just one part of the system. In Horne et al. (2022)'s study, which focuses on the socio-material entanglements of plastic in apartments, researchers state that policy interventions focusing on household behaviors can only marginally impact plastic consumption when uneven infrastructures persist. They argue that such policies may disproportionately burden marginalized households with fewer resources, while diverting attention from more effective solutions, such as addressing broader social norms and meanings around plastics and improving building design and waste management.

5.3. Who is responsible for change?

Regarding the change in plastic consumption, the reviewed articles discussed the responsibilities of different stakeholders in tackling the complex challenges associated with plastic consumption. From individual choices to collective actions, these responsibilities span various dimensions, revealing tensions between individual and collective changes.

5.3.1. Responsibility and consumer awareness

Rhein and Schmid (2020) conducted an empirical study in Germany that revealed five distinct types of consumer awareness regarding plastic packaging. The study showed that one group of consumers, despite having a high awareness of the environmental pollution caused by plastics, did not perceive themselves as responsible. Instead, they viewed the current plastic crisis as an abstract issue originating from consumers and societies outside Germany and Europe in general. Conversely, another group, characterized by a high awareness of consumers' influence on the market, acknowledged their responsibility. These participants recognized that their personal buying decisions regarding plastics could drive change. However, they expressed doubts about whether others shared similar views and questioned the feasibility of collective consumer-driven action. Accordingly, Rhein and Schmid (2020) proposed specific measures tailored to each awareness type that aimed to enhance consumer awareness and promote sustainable plastic consumption behaviors. The suggested interventions included information campaigns, business initiatives, media, and educational strategies, as well as policy measures such as bans and monetary incentives.

5.3.2. Psychological distance and consumer behavior

Barnes' (2019) research on plastic waste exports, psychological distance, and consumer plastic purchasing investigated the complexities

of plastic waste and associated responsibilities. According to Barnes (2019), consumers in high-plastic-consumption and developed countries often perceive plastic wastes as "out of sight, out of mind," influenced by the export of these wastes to lower-income and lower-consumption countries for disposal. This practice shifts the burden of mismanaged plastic wastes and shapes the perceptions of plastic (Barnes, 2019). Barnes (2019) suggested that consumers who contribute to pollution sources distant from the consequences of their actions remain unaware of the impacts, resulting in sustained high consumption and increased pollution. Barnes (2019) recommended that local initiatives in developed countries are crucial for addressing the plastic waste issue domestically rather than transferring the problem to other countries.

5.3.3. Collective action and shared responsibility

According to Heidebreder et al. (2019), an individual adopting a new behavior has the potential to inspire others, thereby altering social norms and triggering a chain reaction that leads to the achievement of a "critical mass of acting people" (p. 1087). In line with the suggested collective action, Heidebreder et al. (2019) emphasized the shift of responsibility as an important barrier to behavior change in plastic consumption. They concluded that to prevent such a shift, collaboration is essential among stakeholders from the research field, politics, industry, trade, and the general public. Highlighting the importance of shared commitment, Cavaliere et al. (2020) found that consumers highly value the actions of other citizens, businesses, and governments, and the commitment level of these entities significantly influences consumers' motivation to reduce plastic consumption.

However, Evans et al. (2020) challenge the tendency to place the burden of responsibility solely on consumers. They argue that plastic consumption is embedded in socio-technical systems and call for a diffuse model of responsibility that addresses the broader socio-technical arrangements that sustain plastic use. Likewise, Horne et al. (2022) highlight that policy interventions targeting household behaviors will have limited success without addressing the root causes of plastic production, particularly the role of the petrochemical industry. They emphasize extended producer responsibility, urging that producers must bear the responsibility for the environmental impact of plastic production and waste.

Further expanding on the need for collaboration, Barbir et al. (2021) emphasized the necessity of collaboration among governments, researchers, businesses, and health organizations. They stressed the need to develop sustainable strategies for the production, consumption, and disposal of plastics in order to mitigate the negative impacts on human health. They highlighted the importance of distributing responsibility and control not only to producers and policymakers but also to consumers, who have the power to decide whether to purchase products. Yurtsever (2019) contributed to this discourse by stating that producers and regulators bear the greatest responsibility regarding sustainability and environmental concerns. However, consumers can significantly contribute to environmental well-being by making conscious decisions about their daily consumption habits and rejecting SUPs (Yurtsever, 2019). Yurtsever (2019) added that compared with attempting to clean up existing pollution, avoiding pollutants at the source is not only easier but also a more economical and ecological alternative. Ultimately, the responsibility for change is distributed among various stakeholders, who each play a vital role in the collective pursuit of a more sustainable and responsible approach to plastic consumption.

6. Discussion

In this section, we will discuss the results of the scoping literature review and reflect on how they address the research questions that aimed to understand state-of-the-art knowledge about plastic consumption in the context of daily life. The first research question of this study sought to disclose and describe the dominant discussions, controversies, and research gaps in plastic consumption research. A notable

finding from the review was that dominant discussions within plastic consumption research build on the studies of *a limited range of plastic products*. Although SUPs were a central focus in most discussions, the variety of SUP products analyzed in the studies was limited. Most of the studies reviewed concentrated on plastic bags and bottles, and only a few studies investigated plastic straws and drinking cups. In contrast, other types of SUPs are mostly overlooked other than in the studies cited above. Hence, much of the existing research concentrates on a narrow subset of SUP items, while other significant SUPs and consumer products remain underexplored.

Single-use menstrual products (Peberdy et al., 2019) and wet wipes (Zhang et al., 2021) are commonly used items that, like other single-use plastics (SUPs), pose significant environmental and health risks. It seems, however, given their less apparent plastic contents, that these products are mostly invisible to consumers and researchers in contrast to the widely discussed products (e.g., plastic bottles, bags, and packaging). Subsequently, this research review highlights that the limited visibility of certain widely used SUP products, such as those with less apparent plastic content, has little influence on the dominant research discussions, produces research outputs that shape the direction of future studies, reinforcing existing trends and focus areas. Thus, the research practice itself unintentionally reinforces the tendency to overlook a wider array of single-use plastics (SUPs) and other consumer products.

Altering this tendency can potentially be influenced by providing the details of ingredients on the outer package of products, as exemplified by Zhang et al. (2021), who pointed out that the contents of wet wipes are listed as nonwoven fabric without giving information on the plastic ingredients. Diversifying the plastic products (single- and multiple-use) included in research and bringing the consumers' attention to the existence of plastics in various products can expand and strengthen the efforts related to coping with the negative effects of plastic consumption. It is essential to cover different types of products to make informed decisions and perform a holistic analysis of plastic consumption. It is equally important to critically examine and diversify the research approaches being used since addressing the challenges of SUPs and their environmental and health impacts requires expanding the focus beyond product types and materials.

In addition to this, findings from the reviewed articles highlight another layer of complexity within the research area by the various existing *controversies and paradoxes* inherent in the consumption of plastic products. As indicated in the reviewed articles, people have *contradictory perceptions* of plastics, and as Löfström et al. (2021) explained, the positive characteristics of plastics can be used to justify their negative characteristics when no alternative solution is available to overcome this complex and contradictory system. Similarly, on another level, Calisto Friant et al. (2021) underline the paradox between words versus actions in European Commission's processes achieving circularity transitions. While the Commission emphasizes the importance of holistic discussions to address circularity, the resulting policies focus on end-of-pipe solutions that fail to address socio-ecological implications and the root causes for the problems intended to solve.

Addressing complex sustainability issues related to plastic consumption with such symptom-based solutions often leads to unintended consequences, where solving one issue can create another problem with conflicting environmental impacts. An example of such an effect disclosed in this review is the production of clothing made from recycled plastics to prevent recyclable materials from ending up in landfills, a process that causes microplastic pollution into the marine environment during the cleaning phase. Similar mechanisms are found in *conflicts in different concerns* exemplified through reuse of old toys and the associated health risks they may pose when used in other products (Almroth and Slunge, 2022). It is thus a challenge to balance circularity with a nontoxic environment and health concerns. *Material replacement* describes similar functions created by symptom-based solutions related to plastic consumption. This approach involves substituting conventional oil-based materials in plastic products with alternatives such as

bioplastics, paper, wood, or replacing polyesters with cotton. Again, the intervention by material replacement may have effects that lead to other problems such as use of arable lands for industry, deforestation, use of water and pesticides. However, from another perspective, replacing plastics with biodegradable materials may be important to prevent the hazardous spread of microplastics in specific areas, such as fragile and remote mountain environments, as shown in the recent study by Senese et al. (2023). This represents yet another challenge in understanding local situations and specific cases of the impact of plastic consumption.

All these strategies originate from the desire to change. Interestingly, Müller (2024) problematizes the change paradigm in her recent study, framing it as the *continuity paradox*. Müller bases this paradox on the idea that the act of changing from one practice is dependent on the dynamics of recruitment from another continuous practice. The argument underlines the paradox of "without continuity, there seems to be no pathway towards change, as continuity paves the way for it" (Müller, 2024, p. 607). Change is also influenced by factors such as convenience, variety, and availability. A recent study by Rabiú and Jaeger-Erben (2024) shows that individuals will typically remain in existing practices or choose new ones based on convenience and product variety, even when aware of conflicts with their health and sustainability goals. Similarly, another recent study from Romania focusing on students' awareness of plastic waste management shows that while students are well informed about biodegradable plastics, their actions depend on the situation, respecting or disregarding the rules for sorting plastic waste (Boca and Saraçlı, 2023). This represents the *convenience paradox*. Summing up these controversies and paradoxes, it is evident that the global plastic waste management problem cannot be attributed to a single factor (Hong, 2023). Accordingly, it cannot be solved by addressing isolated problems or symptoms. In extension, it requires an interdisciplinary approach, as it encompasses a complex set of variables that cannot be tackled from the perspective of a single discipline (Hong, 2023).

Although *the framing of change* varies in the reviewed articles, many plastic consumption studies focus on individual consumption patterns, behavioral approaches, and the role of individuals in addressing plastic consumption across various contexts. These studies typically frame changes in consumption as behavioral changes (e.g., Kautish et al., 2021; Heidbreder et al., 2022; Salazar et al., 2022; Widayat et al., 2022; Raimondo et al., 2022; Dunn et al., 2020; Rapada et al., 2021; Chi, 2022) and explore strategies to influence these behaviors by analyzing the functions of drivers and barriers. However, we argue that behavioral change in isolation is insufficient to address the complexities of plastic consumption and that are deeply interconnected with socio-material conditions and systemic structures that shape behaviors. Åberg and Greene (2024) criticize this narrow focus, stating that research and policy tend to concentrate on steering individual behaviors while largely neglecting the socio-material contexts underpinning consumption patterns. This oversight, they argue, limits progress toward achieving circular and sustainable futures.

In contrast, a smaller body of research adopts systemic and relational perspectives, emphasizing the interconnectedness of practices, systems, and socio-technical frameworks (e.g., Evans et al., 2020; Sattlegger et al., 2020; Horne et al., 2022; Beltran et al., 2021). Such approaches provide a broader lens for understanding change, recognizing that shifts at one level, such as industry transitions to bioplastics, influence multiple systems and subsystems. For example, the adoption of bioplastics in packaging highlights how systemic changes can ripple across sectors and environments, illustrating the value of holistic perspectives (Beltran et al., 2021).

Recent studies further highlight the relevance of relational and practice-oriented approaches in plastic consumption (e.g., Kemper et al., 2024; Åberg and Greene, 2024; Rabiú and Jaeger-Erben, 2024; Müller, 2024). Åberg and Greene (2024), for instance, investigate current and future consumption patterns, focusing on the challenges and opportunities for achieving circular change in the use of plastic products in food

practices. Müller (2024) explores the sustainable practices through packaging-free shopping and highlights the importance of creating multiple connection points between such practices and consumers' everyday lives. Müller (2024) examines change in terms of how continuity and variations in connection points between practices enable and recruit people within one practice to convey their way of doing things onto the practice of others. Connection points, functioning as adapting, inspiration and influence, allow people to maintain their daily routines to a certain extent while adopting a new practice. This function is illustrated by the example of a customer who is offered the service of having their personal containers refilled by staff at a packaging-free store while they are at work, due to limited time for shopping. Change is then based on the dynamics of recruitment and therefore dependent on continuity.

Different framings of change illustrate how the reviewed articles challenge conventional assumptions about the manageability of plastics. Cherrier (2023) argues that the complexity of plastics, once embedded in material interactions and planetary processes, makes them unquantifiable and beyond human control. The researcher calls for a paradigm shift, countering the notion that plastics are flexible and adaptable materials that can be managed through traditional methods.

In this review, we observed that *different research perspectives* elicit various understandings of plastic consumption. The research perspectives that involve studying the challenges connected to plastic consumption through applications of plastics or products, have emerged as a natural consequence of the history of research. Much of this research has become product-specific under the influence of the scholarly environments, disciplines and philosophical paradigms, focusing on the tangible characteristics of plastic applications. For example, behavioral studies often attempt to explain how interactions with products, services, and resources are influenced by psychological factors and their subsequent environmental impact. While these approaches provide valuable insights, they tend to limit the scope of analysis to observable impacts, often neglecting broader systemic and relational factors. Hence, such an approach cannot provide an understanding of how singular suggestions for change function within the broader context. Therefore, the suggested changes may lead to the creation of new problems rather than solving the initial one. Social practice theory offers a contrasting framework, emphasizing habitual activities and social interactions over individual attitudes. It highlights the interconnectedness of three elements: materials (physical objects and infrastructures), competencies (skills and knowledge required to use those materials), and meanings (cultural values and norms associated with practices). Sattlegger et al. (2020) illustrate this through plastic food packaging, comparing two practice-theoretical approaches: the network approach, which focuses on the everyday use of technologies, and the nexus approach, which integrates infrastructural and environmental contexts. These approaches reveal the value of exploring the interplay between social practices and material arrangements, providing a richer understanding of consumption patterns.

To address these limitations, researchers have called for more relational and interdisciplinary approaches and *holistic frameworks for addressing the complexities of plastic consumption*. Evans et al. (2020) argue that understanding plastics requires collaboration across disciplines, combining insights from technical and social sciences. For instance, the complex composition of plastic packaging, often comprising multiple material layers, exemplifies the relational agency of plastics, a concept that many social scientists might overlook without interdisciplinary engagement (Evans et al., 2020). By integrating technical knowledge with social science perspectives, researchers can better understand the socio-material systems underpinning plastic consumption and identify pathways for systemic change.

This interdisciplinary approach aligns with the broader critique of narrow research paradigms, emphasizing the need to move beyond isolated consumer-focused studies. Instead, it advocates for exploring the interrelations between practices, infrastructures, and environmental

contexts, providing a holistic framework for addressing the complexities of plastic consumption and fostering meaningful socio-ecological transformation.

The critique of narrow research approaches extends to an over-emphasis on interventions like recycling and material replacement, which, while valuable, fail to address the deeper issue of over-consumption. These solutions often focus on mitigating symptoms rather than tackling the systemic drivers of plastic waste and pollution. For example, while recycling initiatives aim to close material loops, they frequently neglect the structural changes needed to reduce overall plastic production and consumption. Similarly, replacing traditional plastics with alternatives like bioplastics can result in unintended consequences, such as increased resource demands in other areas, without fundamentally altering consumption patterns. Such approaches risk maintaining the status quo by offering surface-level solutions rather than promoting the transformative changes required to reduce reliance on plastics. Instead, a shift toward broader structural interventions, such as reducing overall consumption, rethinking socio-material systems, and prioritizing sustainable practices, is essential for achieving meaningful and lasting solutions to the plastic crisis.

Accordingly, research demonstrates its power to shape not only environmental outcomes but also the broader socio-political landscape surrounding plastic consumption. Research then plays a critical role in shaping societal narratives and policies, particularly in areas like plastic consumption and sustainability. The ways disciplines investigate and circulate knowledge significantly influence outcomes, as seen in the intersection of research and policy efforts. The research has produced knowledge that has been the origin for the creation of laws and directives to control problems related to the use of plastic. As a result of these processes, single-use plastics (SUPs) have become the most visible and prevalent type of applications investigated in plastic consumption research. Certain SUPs such as plastic bags and bottles have become the subjects of numerous studies and policy regulations. This research-policy nexus highlights the need for critical reflection on how knowledge is produced and applied across disciplines.

Discussions on plastic consumption increasingly emphasize the importance of shared responsibility and collaboration among stakeholders to address its inherent complexities and dilemmas. The findings related to the diffusion of responsibility (Heidbreder et al., 2019) and shared commitment (Cavaliere et al., 2020) in plastic consumption provide an interesting angle into the discussions on the dilemma of plastics and the changing plastic consumption behavior. Reflecting on the reviewed articles, a link between responsibility and shared commitment was observed. The dilemmas and tensions indicate the complexity of plastic consumption, which traps people in ambiguous situations. The shifting responsibility might appear as a solution to the contradictions inherent in plastic consumption. However, rather than passing the responsibility to other actors (e.g., consumers, governments, and businesses), researchers (Heidbreder et al., 2019; Cavaliere et al., 2020; Barbir et al., 2021; Yurtsever, 2019) call for collaborative work, shared commitment, and diffused responsibility to tackle the dilemmas and problems of plastic consumption.

However, these discussions also expose imbalances in power and responsibility. Framing responsibility disproportionately on individuals overlooks the structural barriers, such as limited access to sustainable consumption options and inadequate waste management infrastructure, which deepen inequalities. Policies that focus solely on individual responsibility risk disproportionately burdening low-income communities, failing to promote environmental justice. Cherrier (2023) critiques this imbalance, noting that plastic governance often relies on a "risk frame" that expects consumers to mitigate plastic-related risks, a privilege many cannot afford. Meanwhile, dominant market actors, such as multinational corporations, use guilt-based narratives to shift their responsibility (Cherrier, 2023). Recognizing these power dynamics is crucial for achieving a just transition to a sustainable plastics system. Efforts need to prioritize equitable interventions that address structural

imbalances, ensure fair resource distribution, and hold corporations and policymakers accountable for driving systemic change.

Overall, the identified research gaps and suggestions for future studies based on the review can be summarized in two main points: First, the real scope of plastic products and consumption in terms of product variety has been understudied since most studies included only certain SUPs (e.g., plastic bags and bottles). Other examples of products that either contain plastics or are entirely made of plastics include clothes, sports equipment, toys, electronics, and various hygiene products (e.g., wet wipes, baby diapers, and menstrual products). Research on these items is relatively limited compared to the extensive focus on specific types of SUP products. Extending the type of plastic products included in studies and increasing the visibility of plastics in products can broaden the area of plastic consumption and sustainability implications.

Second, in-depth, holistic, and systemic approaches to coping with the controversies and paradoxes in plastic consumption are lacking. We acknowledge that diverse approaches, including behavioral and systemic studies, may contribute to the topic of plastic consumption differently. However, the dominance of behavioral studies in plastic consumption research may lead to less representation of holistic approaches. Furthermore, many of the studies reviewed tended to stay within their disciplinary boundaries, often avoiding the exploration of connections with other fields. Challenging these disciplinary norms and considering the relational aspects of research from broader perspectives can lead to a more comprehensive understanding and effective management of the complex issues surrounding plastic consumption.

7. Conclusion

This visual scoping literature review presents the dominant discussions and research gaps in plastic consumption by analyzing the selected articles in terms of theoretical approaches, methodologies, country-based studies, relational exploration of thematic results by identifying key concepts, and framing controversies and change in the context of plastic consumption. The result of this review contributes to a critical understanding of the complexity of plastic consumption and the evolving research approaches addressing it. The review provides a critique of different research perspectives on plastic consumption, highlighting dominance of behavioral approaches whereas systemic, relational, and practice-oriented frameworks are only beginning to grow. Further, the review synthesizes insights into the importance of expanding beyond consumer-focused approach, interconnectedness of practices, socio-technical systems, and structural barriers and, offering a nuanced understanding of the challenges and opportunities for addressing plastic consumption.

The review emphasizes the need for critical reflection on the theoretical and disciplinary boundaries of the research and suggests careful considerations of potential blind zones in the process of research design. This involves investigating underexplored areas; for example, the dominant research discussions identified in this review are focused on a limited area of SUPs and materials. In addition, we suggest considering the broader effects of the proposed interventions from a holistic perspective. Embracing interdisciplinary approaches may provide research to deal with these factors contributing to the complexity of plastic consumption. By emphasizing interdisciplinary collaboration, future research can bridge the gap between technical and social sciences, addressing the socio-material complexities of plastics, the socio-economic systems and inequalities affecting sustainable consumption. Furthermore, reflecting on the limitations of current paradigms can help shape more comprehensive research frameworks.

Regarding policy implications for addressing plastic issues, policymakers need to move beyond consumer-centric narratives and address systemic factors, such as corporate accountability and socio-material infrastructures. Policies like the EU Ecodesign for Sustainable Products Regulation (Regulation 1781/2024) exemplify the importance of aligning research with regulations to drive sustainable transitions.

However, policymakers should prioritize equitable solutions, ensuring that interventions do not disproportionately burden particular stakeholders like consumers.

This scoping literature review has certain limitations due to its inherently exploratory nature. While we do not claim to have covered all articles in the field of plastic consumption, we recognize that the selection and interpretation of studies are inevitably influenced by the researchers' perspectives. Our background in design has shaped our approach and insights, which might differ from those of a more diverse team comprising engineers, social scientists, or researchers from the arts and humanities. To address this limitation, we aimed to openly present the steps of our review process and clearly articulate our perspective.

CRedit authorship contribution statement

Ayşe Kaplan Sarısaltık: Writing – review & editing, Writing – original draft, Visualization, Methodology, Formal analysis, Data curation, Conceptualization. **Tore Gulden:** Writing – review & editing, Methodology, Conceptualization. **Casper Boks:** Writing – review & editing, Methodology, Conceptualization.

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Data availability

Data will be made available on request.

References

- Åberg, D.M., Greene, M., 2024. Circular plastic consumption in everyday life: a nexus of practice perspective. *Consum. Soc.* <https://doi.org/10.1332/27528499y2024d000000034>.
- Ajaj, R., Abu Jadayil, W., Anver, H., Aqil, E., 2022. A revision for the different reuses of polyethylene terephthalate (PET) water bottles. *Sustainability* 14 (8), 4583. <https://doi.org/10.3390/su14084583>.
- Ajzen, I., 1991. The theory of planned behavior. *Organ. Behav. Hum. Decis. Process.* 50 (2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T).
- Ajzen, I., Fishbein, M., 1980. *Understanding Attitudes and Predicting Social Behavior*, Paperback ed. Prentice-Hall.
- Alassali, A., Picuno, C., Chong, Z.K., Guo, J., Maletz, R., Kuchta, K., 2021. Towards higher quality of recycled plastics: limitations from the material's perspective. *Sustainability* 13 (23), 13266. <https://doi.org/10.3390/su132313266>.
- Ali, Y., Sara, S., Rehman, O.U., 2021. How to tackle plastic bags and bottles pollution crisis in Pakistan? A cost-benefit analysis approach. *Environ. Ecol. Stat.* 28 (3), 697–727. <https://doi.org/10.1007/s10651-021-00511-6>.
- Ali, S., Ahmed, W., Solangi, Y.A., Chaudhry, I.S., Zarei, N., 2022. Strategic analysis of single-use plastic ban policy for environmental sustainability: the case of Pakistan. *Clean Technol. Environ. Policy* 24 (3), 843–849. <https://doi.org/10.1007/s10098-020-02011-w>.
- Almroth, B.C., Slunge, D., 2022. Circular economy could expose children to hazardous phthalates and chlorinated paraffins via old toys and childcare articles. *J. Hazard Mater. Adv.* 7, 100107. <https://doi.org/10.1016/j.hazadv.2022.100107>.
- Babayemi, J.O., Nnorom, I.C., Osibanjo, O., Weber, R., 2019. Ensuring sustainability in plastics use in Africa: consumption, waste generation, and projections. *Environ. Sci. Eur.* 31 (1), 1–20. <https://doi.org/10.1186/s12302-019-0254-5>.
- Barbir, J., Leal Filho, W., Salvia, A.L., Fendt, M.T.C., Babaganov, R., Albertini, M.C., Bonoli, A., Lackner, M., Müller de Quevedo, D., 2021. Assessing the levels of awareness among European citizens about the direct and indirect impacts of plastics on human health. *Int. J. Environ. Res. Publ. Health* 18 (6), 3116. <https://doi.org/10.3390/ijerph18063116>.
- Barnes, S.J., 2019. Out of sight, out of mind: plastic waste exports, psychological distance and consumer plastic purchasing. *Global Environ. Change* 58, 101943. <https://doi.org/10.1016/j.gloenvcha.2019.101943>.

- Barros, M.V., Salvador, R., Piekarski, C.M., de Francisco, A.C., 2019. Mapping of main research lines concerning life cycle studies on packaging systems in Brazil and in the world. *Int. J. Life Cycle Assess.* 24 (8), 1429–1443. <https://doi.org/10.1007/s11367-018-1573-2>.
- Beltran, M., Tjahjono, B., Bogush, A., Julião, J., Teixeira, E.L.S., 2021. Food plastic packaging transition towards circular bioeconomy: a systematic review of literature. *Sustainability* 13 (7), 3896. <https://doi.org/10.3390/su13073896>.
- Bianchini, A., Rossi, J., 2021. Design, implementation and assessment of a more sustainable model to manage plastic waste at sport events. *J. Clean. Prod.* 281, 125345. <https://doi.org/10.1016/j.jclepro.2020.125345>.
- Blizzard, J.L., Klotz, L.E., 2012. A framework for sustainable whole systems design. *Des. Stud.* 33, 456–479.
- Boca, G.D., Saraçlı, S., 2023. Effects of Romanian student's awareness and needs regarding plastic waste management. *Sustainability* 15 (8), 6811. <https://doi.org/10.3390/su15086811>.
- Booth, A., Sutton, A., Papaioannou, D., 2012. *Systematic Approaches to a Successful Literature Review*. Sage Publications Limited, London.
- Borg, K., Lennox, A., Kaufman, S., Tull, F., Prime, R., Rogers, L., Dunstan, E., 2022. Curbing plastic consumption: a review of single-use plastic behaviour change interventions. *J. Clean. Prod.* 344, 131077. <https://doi.org/10.1016/j.jclepro.2022.131077>.
- Bostan, N., Ilyas, N., Akhtar, N., Mehmood, S., Saman, R.U., Sayyed, R.Z., Shatid, A.A., Alfaifi, M.Y., Elbehairi, S.E.L., Pandiaraj, S., 2023. Toxicity assessment of microplastic (MPs); a threat to the ecosystem. *Environ. Res.* 234, 116523. <https://doi.org/10.1016/j.envres.2023.116523>.
- Bruchmann, K., Chue, S.M., Dillon, K., Lucas, J.K., Neumann, K., Parque, C., 2021. Social comparison information influences intentions to reduce single-use plastic water bottle consumption. *Front. Psychol.* 12, 612662. <https://doi.org/10.3389/fpsyg.2021.612662>.
- Calisto Friant, M., Vermeulen, W.J.V., Salomone, R., 2021. Analysing European Union circular economy policies: words versus actions. *Sustain. Prod. Consum.* 27, 337–353. <https://doi.org/10.1016/j.spc.2020.11.001>.
- Cavaliere, A., Pigliafreddo, S., De Marchi, E., Banterle, A., 2020. Do consumers really want to reduce plastic usage? Exploring the determinants of plastic avoidance in food-related consumption decisions. *Sustainability* 12 (22), 9627. <https://doi.org/10.3390/su12229627>.
- Çevikarslan, S., Gelhard, C.V., Henseler, J., 2022. Improving the material and financial circularity of the plastic packaging value chain in The Netherlands: challenges, opportunities, and implications. *Sustainability* 14 (12), 7404. <https://doi.org/10.3390/su14127404>.
- Chen, T., Zhang, Y., Yang, J., Cong, G., Jiang, G., Li, G., 2021. Behavior strategy analysis based on the multi-stakeholder game under the plastic straw ban in China. *Int. J. Environ. Res. Publ. Health* 18 (23), 12729. <https://doi.org/10.3390/ijerph182312729>.
- Cherrier, H., 2023. Risky plastics and the limits to consumer responsabilization. *Cambridge Prism: Plastics 1* (e20), 1–8. <https://doi.org/10.1017/plc.2023.20>.
- Chi, N.T.K., 2022. Ethical consumption behavior towards eco-friendly plastic products: implication for cleaner production. *Clean Res. Consum.* 5, 100055. <https://doi.org/10.1016/j.crc.2022.100055>.
- Chirico, A., Scurati, G.W., Maffi, C., Huang, S., Graziosi, S., Ferrise, F., Gaggioli, A., 2021. Designing virtual environments for attitudes and behavioral change in plastic consumption: a comparison between concrete and numerical information. *Virtual Real.* 25 (1), 107–121. <https://doi.org/10.1007/s10055-020-00442-w>.
- Choudhary, P., Kumar Jain, N., Panda, A., 2022. Making small and medium enterprises circular economy compliant by reducing the single use plastic consumption. *J. Bus. Res.* 149, 448–462. <https://doi.org/10.1016/j.jbusres.2022.05.038>.
- Cowan, E., Tiller, R., 2021. What shall we do with a sea of plastics? A systematic literature review on how to pave the road toward a global comprehensive plastic governance agreement. *Front. Mar. Sci.* 8, 798534.
- Crowley, J., 2020. Plastic bag consumption habits in the Northern Philippines. *Resour. Conserv. Recycl.* 160, 104848. <https://doi.org/10.1016/j.resconrec.2020.104848>.
- Cruz Sanchez, F.A., Boudaoud, H., Camargo, M., Pearce, J.M., 2020. Plastic recycling in additive manufacturing: a systematic literature review and opportunities for the circular economy. *J. Clean. Prod.* 264, 121602. <https://doi.org/10.1016/j.jclepro.2020.121602>.
- da Silva, L.F., Resnitzky, M.H.C., Santibanez Gonzalez, E.D.R., de Melo Conti, D., da Costa, P.R., 2022. Management of plastic waste and a circular economy at the end of the supply chain: a systematic literature review. *Energies* 15 (3), 976. <https://doi.org/10.3390/en15030976>.
- Demichelis, F., Riccardo, C., Edoardo Degli, I., Edoardo, G., Chiara, L., Lisa, O., 2019. Improving plastic management by means of people awareness. *CERN IdeaSquare J. Exp. Innov.* 3 (1), 33–39. <https://doi.org/10.23726/cij.2019.882>.
- Dijkstra, H., van Beukering, P., Brouwer, R., 2020. Business models and sustainable plastic management: a systematic review of the literature. *J. Clean. Prod.* 258, 1–14.
- Dunn, M.E., Mills, M., Veríssimo, D., 2020. Evaluating the impact of the documentary series Blue Planet II on viewers' plastic consumption behaviors. *Conserv. Sci. Pract.* 2 (10), e280. <https://doi.org/10.1111/csp.2.280>.
- Evans, M.D., Parsons, R., Jackson, P., Greenwood, S., Ryan, A., 2020. Understanding plastic packaging: the co-evolution of materials and society. *Global Environ. Change* 65, 102166. <https://doi.org/10.1016/j.gloenvcha.2020.102166>.
- Filho, J.C., Nunhes, T.V., Oliveira, O.J., 2019. Guidelines for cleaner production implementation and management in the plastic footwear industry. *J. Clean. Prod.* 232, 822–838. <https://doi.org/10.1016/j.jclepro.2019.05.343>.
- Fogt Jacobsen, L., Pedersen, S., Thøgersen, J., 2022. Drivers of and barriers to consumers' plastic packaging waste avoidance and recycling—a systematic literature review. *Waste Manag.* 141, 63–78. <https://doi.org/10.1016/j.wasman.2022.01.021>.
- Friedrich, D., 2021. What makes bioplastics innovative for fashion retailers? An in-depth analysis according to the Triple Bottom Line Principle. *J. Clean. Prod.* 316, 128257. <https://doi.org/10.1016/j.jclepro.2021.128257>.
- Garza-Reyes, J.A., 2015. Lean and green—a systematic review of the state of the art literature. *J. Clean. Prod.* 102, 18–29. <https://doi.org/10.1016/j.jclepro.2015.04.064>.
- Gaylarde, C., Baptista-Neto, J.A., da Fonseca, E.M., 2021. Plastic microfibre pollution: how important is clothes' laundering? *Heliyon* 7 (5), e07105. <https://doi.org/10.1016/j.heliyon.2021.e07105>.
- Geyer, R., Jambeck, J.R., Law, K.L., 2017. Production, use, and fate of all plastics ever made. *Sci. Adv.* 3 (7), e1700782. <https://doi.org/10.1126/sciadv.1700782>.
- Gul, DeS., Gul, A., Tanoli, A.K., Ahmed, T., Mirza, M.A., 2022. Contamination by hazardous elements in low-priced children's plastic toys bought on the local markets of Karachi, Pakistan. *Environ. Sci. Pollut. Res. Int.* 29 (34), 51964–51975. <https://doi.org/10.1007/s11356-022-19362-0>.
- Hanger-Kopp, S., Lemke, L.K.G., Beier, J., 2024. What qualitative systems mapping is and what it could be: integrating and visualizing diverse knowledge of complex problems. *Sustain. Sci.* 19, 1065–1078. <https://doi.org/10.1007/s11625-024-01497-3>.
- Heidbreder, L.M., Bablok, I., Drews, S., Menzel, C., 2019. Tackling the plastic problem: a review on perceptions, behaviors, and interventions. *Sci. Total Environ.* 668, 1077–1093. <https://doi.org/10.1016/j.scitotenv.2019.02.437>.
- Heidbreder, L.M., Steinhorst, J., Schmitt, M., 2020. Plastic-free July: an experimental study of limiting and promoting factors in encouraging a reduction of single-use plastic consumption. *Sustainability* 12 (11), 4698. <https://doi.org/10.3390/su12114698>.
- Heidbreder, L.M., Lange, M., Reese, G., 2021. #PlasticFreeJuly—analyzing a worldwide campaign to reduce single-use plastic consumption with Twitter. *Environ. Commun.* 15 (7), 937–953. <https://doi.org/10.1080/17524032.2021.1920447>.
- Heidbreder, L.M., Tröger, J., Schmitt, M., 2022. Exploring the psychological antecedents of private and public sphere behaviours to reduce household plastic consumption. *Environ. Dev. Sustain.* 25, 3405–3428. <https://doi.org/10.1007/s10668-022-02186-w>.
- Hong, Y., 2023. Study on the Maximum Level of Disposable Plastic Product Waste. *Sustainability* 15 (12), 9360. <https://doi.org/10.3390/su15129360>.
- Horne, R., Dorignon, L., Middha, B., 2022. High-rise plastic: socio-material entanglements in apartments. *Geogr. J.* 1–14. <https://doi.org/10.1111/geoj.12457>.
- Hossain, R., Islam, M.T., Shanker, R., Khan, D., Locock, K.E.S., Ghose, A., Schandl, H., Dhodapkar, R., Sahajwalla, V., 2022. Plastic waste management in India: challenges, opportunities, and roadmap for circular economy. *Sustainability* 14 (8), 4425. <https://doi.org/10.3390/su14084425>.
- Huang, S., Wang, H., Ahmad, W., Ahmad, A., Ivanovich Vatin, N., Mohamed, A.M., Deifalla, A.F., Mehmood, L., 2022. Plastic waste management strategies and their environmental aspects: a scientometric analysis and comprehensive review. *Int. J. Environ. Res. Publ. Health* 19 (8), 4556. <https://doi.org/10.3390/ijerph19084556>.
- Jahani, A., Dehdari, T., Farzadkia, M., Mansourian, M., 2019. Iranian experiences in terms of consumption of disposable single-use plastics: introduction to theoretical variables for developing environmental health promotion efforts. *Environ. Toxicol. Pharmacol.* 65, 18–22. <https://doi.org/10.1016/j.etap.2018.11.004>.
- Kahneman, D., 1992. Reference points, anchors, norms, and mixed feelings. *Organ. Behav. Hum. Decis. Process.* 51 (2), 296–312. [https://doi.org/10.1016/0749-5978\(92\)90015-y](https://doi.org/10.1016/0749-5978(92)90015-y).
- Kakadellis, S., Harris, Z.M., 2020. Don't scrap the waste: the need for broader system boundaries in bioplastic food packaging life-cycle assessment—a critical review. *J. Clean. Prod.* 274, 122831. <https://doi.org/10.1016/j.jclepro.2020.122831>.
- Kautish, P., Sharma, R., Mangla, S.K., Jabeen, F., Awan, U., 2021. Understanding choice behavior towards plastic consumption: an emerging market investigation. *Resour. Conserv. Recycl.* 174, 105828. <https://doi.org/10.1016/j.resconrec.2021.105828>.
- Kemper, Joya A., Spotswood, Fiona, White, Samantha K., 2024. The emergence of plastic-free grocery shopping: understanding opportunities for practice transformation. *J. Environ. Manag.* 349. <https://doi.org/10.1016/j.jenvman.2023.119290>.
- Khan, F., Ahmed, W., Najmi, A., 2019. Understanding consumers' behavior intentions towards dealing with the plastic waste: perspective of a developing country. *Resour. Conserv. Recycl.* 142, 49–58. <https://doi.org/10.1016/j.resconrec.2018.11.020>.
- Khoironi, A., Anggoro, S., Sudarmo, S., 2019. Community behavior and single-use plastic bottle consumption. *IOP Conf. Ser. Earth Environ. Sci.* 293 (1), 12002. <https://doi.org/10.1088/1755-1315/293/1/012002>.
- Klein, F.F., Emberger-Klein, A., Menrad, K., 2020. Indicators of consumers' preferences for bio-based apparel: a German case study with a functional rain jacket made of bioplastic. *Sustainability* 12 (2), 675. <https://doi.org/10.3390/su12020675>.
- Kraftl, P., Hadfield-Hill, S., Jarman, P., Lynch, I., Menzel, A., Till, R., Walker, A., 2022. Articulating encounters between children and plastics. *Childhood (Copenhagen, Denmark)* 29 (4), 478–494. <https://doi.org/10.1177/09075682221100879>.
- Krippendorff, K., 2007. The cybernetics of design and the design of cybernetics. *Kybernetes* 36 (9/10), 1381–1392. <https://doi.org/10.1108/03684920710827364>.
- Kumagai, K., 2021. Sustainable plastic clothing and brand luxury: a discussion of contradictory consumer behaviour. *Asia Pac. J. Mark. Logist.* 33 (4), 994–1013. <https://doi.org/10.1108/APJML-04-2020-0274>.
- Lavelle-Hill, R., Goulding, J., Smith, G., Clarke, D.D., Bibby, P.A., 2020. Psychological and demographic predictors of plastic bag consumption in transaction data. *J. Environ. Psychol.* 72, 101473. <https://doi.org/10.1016/j.jenvp.2020.101473>.
- Liu, C., Bunditsakulchai, P., Zhuo, Q., 2021. Impact of COVID-19 on food and plastic waste generated by consumers in Bangkok. *Sustainability* 13 (16), 8988. <https://doi.org/10.3390/su13168988>.

- Liu, Y., Cao, Y., Li, H., Liu, H., Bi, L., Chen, Q., Peng, R., 2024. A systematic review of microplastics emissions in kitchens: understanding the links with diseases in daily life. *Environ. Int.* 188, 108740. <https://doi.org/10.1016/j.envint.2024.108740>.
- Löfström, E., Richter, I., Nesvold, I.H., 2021. Disruptive communication as a means to engage children in solving environmental challenges: a case study on plastic pollution. *Front. Psychol.* 12, 635448. <https://doi.org/10.3389/fpsyg.2021.635448>.
- Macintosh, A., Simpson, A., Neeman, T., Dickson, K., 2020. Plastic bag bans: lessons from the Australian Capital Territory. *Resour. Conserv. Recycl.* 154, 104638. <https://doi.org/10.1016/j.resconrec.2019.104638>.
- Makarchev, N., Xiao, C., Yao, B., Zhang, Y., Tao, X., Le, D.A., 2022. Plastic consumption in urban municipalities: characteristics and policy implications of Vietnamese consumers' plastic bag use. *Environ. Sci. Pol.* 136, 665–674. <https://doi.org/10.1016/j.envsci.2022.07.015>.
- Markevičiūtė, Z., Varžinskas, V., 2022a. Plant-origin feedstock applications in fully green food packaging: the potential for tree-free paper and plant-origin bio-plastics in the Baltic Sea Region. *Sustainability* 14 (12), 7393. <https://doi.org/10.3390/su14127393>.
- Markevičiūtė, Z., Varžinskas, V., 2022b. Smart material choice: the importance of circular design strategy applications for bio-based food packaging preproduction and end-of-life life cycle stages. *Sustainability* 14 (10), 6366. <https://doi.org/10.3390/su14106366>.
- McDonough, W., Braungart, M., 2002. *Cradle to Cradle: Remaking the Way We Make Things*. North Point Press, New York.
- Meng, M.D., Leary, R.B., 2021. It might be ethical, but I won't buy it: perceived contamination of, and disgust towards, clothing made from recycled plastic bottles. *Psychol. Market.* 38 (2), 298–312. <https://doi.org/10.1002/mar.21323>.
- Miller, S., Bolger, M., Coppello, L., 2019. *Reusable Solutions: How Governments Can Help Stop Single Use Plastic Pollution*. 3Keel. Oxford, United Kingdom.
- Mortensen, L.F., Tange, I., Stenmarck, Å., Fråne, A., Nielsen, T., Boberg, N., Bauer, F., 2021. Plastics, the Circular Economy and Europe's Environment—A Priority for Action (IEA Report; No. 18/2020). Publications Office of the European Union, Copenhagen. https://www.eea.europa.eu/ds_resolveuid/SQXND7B5F0.
- Mugobo, V.V., Ntuli, H., Iwu, C.G., 2022. Consumer perceptions of the use of nondegradable plastic packaging and environmental pollution: a review of theories and empirical literature. *J. Risk Financ. Manag.* 15 (6), 244. <https://doi.org/10.3390/jrfm15060244>.
- Müller, A., 2024. Connection points: the dynamics of recruitment to packaging-free shopping. *Socio. Res. Online* 29 (3), 596–611. <https://doi.org/10.1177/13607804231180055>.
- Nguyen, X.C., Dao, D.C., Nguyen, T.T., Tran, Q.B., Huyen Nguyen, T.T., Tuan, T.A., Phuong Nguyen, K.L., Nguyen, V.-T., Nadda, A.K., Thanh-Nho, N., Chung, W.J., Chang, S.W., Nguyen, D.D., 2022. Generation patterns and consumer behavior of single-use plastic towards plastic-free university campuses. *Chemosphere* 291 (Pt 3), 133059. <https://doi.org/10.1016/j.chemosphere.2021.133059>.
- Oturai, N.G., Pahl, S., Syberg, K., 2022. How can we test plastic pollution perceptions and behavior? A feasibility study with Danish children participating in "the Mass Experiment". *Sci. Total Environ.* 806 (Pt 4), 150914. <https://doi.org/10.1016/j.scitotenv.2021.150914>.
- Owen, L., 2022. Stigma, sustainability, and capitals: a case study on the menstrual cup. *Gend. Work. Organ.* 29 (4), 1095–1112. <https://doi.org/10.1111/gwao.12808>.
- Patrício Silva, A.L., Prata, J.C., Walker, T.R., Duarte, A.C., Ouyang, W., Barcelò, D., Rocha-Santos, T., 2021. Increased plastic pollution due to COVID-19 pandemic: challenges and recommendations. *Chem. Eng. J.* 405, 126683. <https://doi.org/10.1016/j.cej.2020.126683>.
- Peberdy, E., Jones, A., Green, D., 2019. A study into public awareness of the environmental impact of menstrual products and product choice. *Sustainability* 11 (2), 473. <https://doi.org/10.3390/su11020473>.
- Penfold, L.K., Odegard, N., 2021. Making kin with plastic through aesthetic experimentation. *Can. Child* 46 (2), 51–65. <https://doi.org/10.18357/jcs462202119559>.
- Pham, C.H., Nguyen, H.V., Le, M.T.T., Do, L.T., Nguyen, P.T.T., 2022. The synergistic impact of motivations on sustained pro-environmental consumer behaviors: an empirical evidence for single-use plastic products. *Asia Pac. J. Market. Logist.* 34 (2), 287–305. <https://doi.org/10.1108/APJML-08-2020-0570>.
- Raab, K., Wagner, R., Ertz, M., Salem, M., 2022. When marketing discourages consumption: demarketing of single-use plastics for city tourism in Ottawa, Canada. *J. Ecotourism* 22 (3), 375–405. <https://doi.org/10.1080/14724049.2022.2028794>.
- Rabiu, K.M., Jaeger-Erben, M., 2024. Reducing single-use plastic in everyday social practices: insights from a living lab experiment. *Resour. Conserv. Recycl.* 200, 107303.
- Raimondo, M., Hamam, M., D'Amico, M., Caracciolo, F., 2022. Plastic-free behavior of millennials: an application of the theory of planned behavior on drinking choices. *Waste Manag.* 138, 253–261. <https://doi.org/10.1016/j.wasman.2021.12.004>.
- Rapada, M.Z., Yu, D.E., Yu, K.D., 2021. Do social media posts influence consumption behavior towards plastic pollution? *Sustainability* 13 (22), 12334. <https://doi.org/10.3390/su132212334>.
- Regulation 1781/2024. Regulation (EU) 2024/1781 of the European Parliament and of the Council of 13 June 2024 establishing a framework for the setting of ecodesign requirements for sustainable products, amending Directive (EU) 2020/1828 and Regulation (EU) 2023/1542 and repealing Directive 2009/125/EC <http://data.europa.eu/eli/reg/2024/1781/oj>.
- Rhein, S., Schmid, M., 2020. Consumers' awareness of plastic packaging: more than just environmental concerns. *Resour. Conserv. Recycl.* 162, 105063. <https://doi.org/10.1016/j.resconrec.2020.105063>.
- Røstvik, C.M., 2020. Mother nature as brand strategy: gender and creativity in Tampax advertising 2007–2009. *Enterprise Soc.* 21, 413–452.
- Salazar, C., Jaime, M., Leiva, M., González, N., 2022. From theory to action: explaining the process of knowledge attitudes and practices regarding the use and disposal of plastic among school children. *J. Environ. Psychol.* 80, 101777. <https://doi.org/10.1016/j.jenvp.2022.101777>.
- Sattlegger, L., Stieß, I., Raschewski, L., Reindl, K., 2020. Plastic packaging, food supply, and everyday life: adopting a social practice perspective in social-ecological research. *Nat. Cult.* 15 (2), 146–172. <https://doi.org/10.3167/nc.2020.150203>.
- Scherer, C., Emberger-Klein, A., Menrad, K., 2018. Segmentation of interested and less interested consumers in sports equipment made of bio-based plastic. *Sustain. Prod. Consum.* 14, 53–65. <https://doi.org/10.1016/j.spc.2018.01.003>.
- Senese, A., Pecci, M., Ambrosini, R., Diolaiuti, G.A., 2023. MOUNTAINPLAST: a new Italian plastic footprint with a focus on mountain activities. *Sustainability* 15 (8), 7017. <https://doi.org/10.3390/su15087017>.
- Shittu, O., 2021. 'Almost everything in the house now is plastic': foregrounding plastic materiality in household routines and practices. *Socio. Res. Online* 28 (1), 132–149. <https://doi.org/10.1177/13607804211034887>.
- Stanton, T., Kay, P., Johnson, M., Chan, F.K.S., Gomes, R.L., Hughes, J., Meredith, W., Orr, H.G., Snape, C.E., Taylor, M., Weeks, J., Wood, H., Xu, Y., 2021. It's the product not the polymer: rethinking plastic pollution. *Wiley Interdiscip. Rev. Water* 8 (1), e1490. <https://doi.org/10.1002/wat2.1490>.
- Sun, Q., Ren, S.Y., Ni, H.G., 2020. Incidence of microplastics in personal care products: an appreciable part of plastic pollution. *Sci. Total Environ.* 742, 140218. <https://doi.org/10.1016/j.scitotenv.2020.140218>.
- Sundqvist-Andberg, H., Åkerman, M., 2021. Sustainability governance and contested plastic food packaging—an integrative review. *J. Clean. Prod.* 306, 127111. <https://doi.org/10.1016/j.jclepro.2021.127111>.
- SYSTEMIQ, 2022. ReShaping Plastics: Pathways to a Circular, Climate Neutral Plastics System in Europe. SYSTEMIQ, Amsterdam. <https://plasticseurope.org/wp-content/uploads/2022/04/SYSTEMIQ-ReShapingPlastics-April2022.pdf>. (Accessed 26 August 2024).
- Thompson, R.C., Swan, S.H., Moore, C.J., vom Saal, F.S., 2009. Our plastic age. *Philos. Trans. R. Soc. Lond. B Biol. Sci.* 364 (1526), 1973–1976. <https://doi.org/10.1098/rstb.2009.0054>.
- Van Rensburg, M.L., Nkomo, S.P.L., Dube, T., 2020. The 'plastic waste era' social perceptions towards single-use plastic consumption and impacts on the marine environment in Durban, South Africa. *Appl. Geogr.* 114, 102132. <https://doi.org/10.1016/j.apgeog.2019.102132>.
- Van Roijen, E.C., Miller, S.A., 2022. A review of bioplastics at end-of-life: linking experimental biodegradation studies and life cycle impact assessments. *Resour. Conserv. Recycl.* 181, 106236. <https://doi.org/10.1016/j.resconrec.2022.106236>.
- Walsh, S., Böhme, J., Wamsler, C., 2021. Towards a relational paradigm in sustainability research, practice, and education. *Ambio* 50, 74–84. <https://doi.org/10.1007/s13280-020-01322-y>.
- Watkin, G., Mallen, C., Hyatt, C., 2020. Management perspectives on plastics free sport facilities' beverage service. *J. Manag. Sustain.* 11 (1), 1.
- Wheeldon, J., Åhlberg, M.K., 2012. *Visualizing Social Science Research: Maps, Methods, and Meaning*. SAGE Publications, London.
- Widayat, W., Praharjo, A., Putri, V.P., Andharini, S.N., Masudin, I., 2022. Responsible consumer behavior: driving factors of pro-environmental behavior toward post-consumption plastic packaging. *Sustainability* 14 (1), 425. <https://doi.org/10.3390/su14010425>.
- Wiefek, J., Steinhilber, J., Beyerl, K., 2021. Personal and structural factors that influence individual plastic packaging consumption—results from focus group discussions with German consumers. *Clean Resp. Consum.* 3, 100022. <https://doi.org/10.1016/j.jchr.2021.100022>.
- Winton, D., Marazzi, L., Loïselle, S., 2022. Drivers of public plastic (mis)use—new insights from changes in single-use plastic usage during the COVID-19 pandemic. *Sci. Total Environ.* 849, 157672. <https://doi.org/10.1016/j.scitotenv.2022.157672>.
- Xiao, Y., Watson, M., 2019. Guidance on conducting a systematic literature review. *J. Plann. Educ. Res.* 39 (1), 93–112. <https://doi.org/10.1177/0739456X17723971>.
- Yurtsever, M., 2019. Glitters as a source of primary microplastics: an approach to environmental responsibility and ethics. *J. Agric. Environ. Ethics* 32, 459–478. <https://doi.org/10.1007/s10806-019-09785-0>.
- Zachrisson, J., Boks, C., 2012. Exploring behavioural psychology to support design for sustainable behaviour research. *J. Des. Res.* 14 (10), 50–66, 1–2.
- Zambrano-Monserrate, M.A., Alejandra Ruano, M., 2020. Do you need a bag? Analyzing the consumption behavior of plastic bags of households in Ecuador. *Resour. Conserv. Recycl.* 152, 104489. <https://doi.org/10.1016/j.resconrec.2019.104489>.
- Zapata, O., 2021. The relationship between climate conditions and consumption of bottled water: a potential link between climate change and plastic pollution. *Ecol. Econ.* 187, 107090. <https://doi.org/10.1016/j.ecolecon.2021.107090>.
- Zhang, Y., Wen, Z., Lin, W., Hu, Y., Kosajan, V., Zhang, T., 2021. Life-cycle environmental impact assessment and plastic pollution prevention measures of wet wipes. *Resour. Conserv. Recycl.* 174, 105803. <https://doi.org/10.1016/j.resconrec.2021.105803>.