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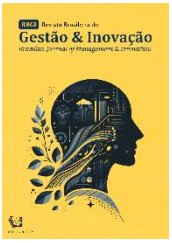

Circular Economy of Packaging in Brazil: Stakeholders' Perspectives on its Institutionalization

Economia Circular de Embalagem no Brasil: A perspectiva das partes interessadas sobre a sua Institucionalização

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HIGHLIGHTS

- This study analyzes the three stages of packaging Circular Economy institutionalization in Brazil, revealing the country remains in the initial phase despite a decade since the National Solid Waste Policy was enacted.
- Based on 53 interviews across 21 Brazilian states, the research explores stakeholder perceptions, uncovering key conflicts, barriers, and challenges that hinder circular practices in the packaging sector.
- Findings highlight the lack of economic incentives, persistent stakeholder conflicts, and limited inclusion of waste pickers as critical obstacles to institutionalizing packaging circularity in Brazil.
- The study offers a theoretical-empirical framework applicable to emerging economies and delivers practical insights for governments, industry, academia, and civil society on overcoming waste management challenges.
- Institutionalizing circularity requires coherent public policies, environmental education, and strengthened social control mechanisms that empower historically marginalized actors within the waste management chain.

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KEYORDS

Circular Economy

Reverse Logistics

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ABSTRACT

Objective: the study aims to analyze the stages of institutionalization of the Circular Economy (CE) of packaging in Brazil, based on the assumptions of Institutional Theory, which allows the internalization of values and the legitimation of practices in society.

Design/Method/Approach: this is an applied, qualitative, and descriptive study. Data collection involved document analysis and in-depth interviews, triangulated to enable cross-analysis of perceptions. Fifty-three (53) stakeholders from the Brazilian packaging chain participated in the study.

Originality/Relevance: by applying Institutional Theory, the study sheds light on the early institutionalization phase of packaging circularity in Brazil and identifies how innovations and social conflicts hinder this process. It also presents a three-phase framework for institutionalization.

Main Results/Findings: the results indicate Brazil is in the habitualization stage of institutionalization. Despite the Brazilian Policy of Solid Waste (BPSW) being sanctioned over ten years ago, implementation remains limited due to problems like informal dumping, low recycling rates, exclusion of waste pickers, and lack of integrated management. Stakeholders reported conflicts and weak social control, impeding progress to the sedimentation stage.

Theoretical/Methodological Contributions/Implications: the study contributes to advancing knowledge on the institutionalization of the Circular Economy, proposing a structured framework to classify institutionalization phases. It deepens the understanding of how social innovation can support CE implementation in emerging economies.

Social/Managerial Contributions: the study identifies practical barriers to implementing packaging circularity in Brazil. It provides relevant insights for public policy, sectoral governance, and stakeholder engagement, especially highlighting the role of inclusion and social control mechanisms.

PALAVRAS-CHAVE

Economia Circular

Logística Reversa

Gestão de resíduos

Teoria Institucional

Embalagem

RESUMO

Objetivo: o estudo tem como objetivo analisar as etapas de institucionalização da Economia Circular (EC) das embalagens no Brasil, com base nos pressupostos da Teoria Institucional, que permite a internalização de valores e legitimação de práticas sociais.

Design/Metodologia/Abordagem: trata-se de uma pesquisa aplicada, qualitativa e descritiva. A coleta de dados foi realizada por meio da triangulação entre análise documental e entrevistas em profundidade. Participaram do estudo 53 (cinquenta e três) stakeholders que atuam na cadeia de embalagens no Brasil.

Originalidade/Relevância: ao aplicar a Teoria Institucional, o estudo evidencia a fase inicial de institucionalização da circularidade das embalagens e identifica como conflitos e limitações estruturais dificultam esse processo. Apresenta ainda um modelo com três fases de institucionalização.

Principais Resultados/Constatações: os resultados apontam que o Brasil encontra-se na fase de habitualização. Mesmo após dez anos da sanção da Política Nacional de Resíduos Sólidos (PNRS), sua implementação é incipiente devido à existência de lixões, baixos índices de reciclagem, exclusão socioprodutiva dos catadores e fraca integração na gestão de resíduos. Conflitos entre atores e ausência de controle social impedem o avanço à fase de sedimentação.

Contribuições Teóricas/Metodológicas/Implicações: o estudo contribui para o avanço do conhecimento sobre a institucionalização da EC, propondo um modelo teórico que estrutura suas fases. Aprofunda o entendimento sobre como a inovação social pode apoiar a implementação da EC em economias emergentes.

Contribuições Sociais/Gerenciais: identifica barreiras práticas à implementação da circularidade das embalagens no Brasil. Oferece subsídios relevantes para políticas públicas, governança setorial e engajamento dos stakeholders, com destaque para o papel da inclusão e dos mecanismos de controle social.

1. Introduction

The idea of Circular Economy (CE) was introduced more than fifty years ago, when schools of thought began shaping the theoretical foundations of a transition from a linear to a circular economy (Arsova et al., 2022). This would result from a growing recognition that the economic linear model is highly unsustainable, creating the urgency to move forward with a sustainable way of conducting business and generating wealth (Sarja et al., 2021).

In this context, the CE arises as a proposal to do business innovatively: considering products and processes design, the direct and reverse logistic flow, integrating the supply chain to reduce the negative impacts on the environment through actions of Reduction, Reuse, Recycling (3Rs), among others (Batista et al., 2018; Mishra et al. 2023). The European Union identified five priorities of resources for close looping, and one of them is plastics, widely applied in packaging production (Colijn et al., 2022). The 3Rs, when applied to packaging, tend to contribute not only to environmental issues but also to reduce waste management costs and to enable the socio-productive inclusion of waste pickers (Guarnieri et al., 2020).

Brazilian authorities have already been mobilized to seek ways to transitioning to CE (Silva & Morais, 2021), but still does not have any legislation or government guidelines that directly cites it. Given its principles, instruments and objectives, the Brazilian Policy of Solid Waste (BPSW) is closest to the concept of CE (Guarnieri et al., 2020; Pereira et al., 2020). This law, enacted in 2010, represented an important milestone in environmental legislation by legitimizing the search for integrated solid waste management (Brazil, 2010).

According to data from the Brazilian Association of Public Cleaning Companies and Special Waste (ABRELPE), in Brazil, approximately 6 billion dollars are allocated (annually) to public services for the management of Urban Solid Waste (USW) and urban cleaning. More than 40% of all collected material in the country is still destined for dumps and controlled landfills. These locations are considered environmentally unsuitable as they do not have the infrastructure to minimize environmental impact (ABRELPE, 2021). The BPSW is the Brazilian legal instrument that is most in line with the principles of the Circular Economy and, consequently, its real implementation is what would elevate Brazil to a nation towards CE.

As a novel approach, the CE requires rebuilding and restructuring processes and systems, also demands societal acceptance, different actors' involvement, as well as technological modifications to prosper and eventually consolidate (Sarja et al., 2021; Zhang et al., 2023). According to Institutional Theory (IT), to make something institutionalized is to make it possible for society to internalize values, causing certain attitudes to be considered appropriate or correct (Dimaggio & Powell, 1983). Through the legitimation of these patterns, long-term repetition occurs, which inevitably shapes the dynamics of the actors that make up such a society (Stacey & Rittberger, 2003). A sequential logic of phases in the institutionalization process was observed and theorized by Tolbert & Zucker (1999), and the generic model created helps analysts understand various social phenomena.

There is still a lack of studies investigating the institutions involving the CE (Fischer & Pascucci, 2017), especially empirical investigations that analyse the performance of actors and stakeholder engagement in the construction of a circular supply chain (Masi et al., 2017; Provensi et al., 2024). There is also a lack of studies investigating circular waste management principles, especially in developing countries (Rebehy et al., 2023). This paper aims to analyse the stages of institutionalization of the Circular Economy of packaging in Brazil.

Starting from the understanding that institutions are cognitive constructions, they tend to spread through society through subjects and their actions after being consolidated. We believe that the Circular Economy can and deserves to grow, gain legitimacy and help Brazil fight historical problems. The study contributes to the field by improving understanding on Circular Economy implementation in emerging economies, in a high-impact and relevant sector, as it explores environmental and social benefits from stakeholder's perspectives. It also offers a description of three phases of institutionalization.

The remainder of the paper is organized into four sections. The paper brings a theoretical framework on waste management for Brazil, its relationship with CE and Institutional Theory. Based on previously published work, the theoretical background session will also discuss management challenges for innovation in open systems such as emerging economies. The classifications and methodological steps of the case study performed are presented. Each of the three phases of institutionalization are explained and the country's position is demonstrated, based on the content analysis of the interviewees. Final considerations bring the main limitations of empirical investigation and suggestions for future research.

2. Theoretical Background

2.1 Packaging Waste Management and the Circular Economy

The packages are typically produced from paper, plastic, glass and aluminium and have the characteristic of being discarded immediately after consumption of the product. Therefore, the various participants in the chain must have environmental responsibility in the project, from production, filling and distribution. The attention of those responsible involves the choice of material and the amount used (Almeida et al., 2017).

Countries in the northern hemisphere successfully transitioning to the CE have similar characteristics: a stable economy, favourable political climate, well-established control and governance criteria, and adequate infrastructure (Ezeudu & Ezeudu, 2019). The European continent's recycling targets are considered ambitious, it is intended to achieve a 65% recycling rate of the dry fraction of municipal solid waste by 2030, with the imposition of maximum limits for disposal in landfills (Traven et al., 2018). Even in Europe, there are inequalities in municipal recovery rates for packaging and the current reality does not demonstrate that the laws developed are sufficient in the face of excessive consumption (Scrioşteanu & Criveanu, 2023). Abandoning the old way of managing waste and identifying possible improvement points at each stage of the chain is necessary to increase the circularity of materials (Tallentire & Steubing, 2020; Mishra et al. 2023).

In developing countries, recycling rates are low and marked by a strong presence of an informal sector, parallel to the government. According to Ferronato et al. (2019), responsible for applying case studies in Bolivia and Romania, recycling rates would tend to increase if the informal sector were included and valued in these countries. As in Nigeria, most developing countries lack specialized waste management policies and regulations, educational campaigns for the population, and logistical infrastructure (Ezeudu & Ezeudu, 2019). To enable such inclusion, several stakeholders must put pressure on the authorities, including citizens and universities (Tirado-soto & Zamberlan, 2013), so that political agents realize that this is a demand from society.

In Demajorovic et al. (2019) they evaluated the reverse logistics of components and packaging used in the handling and transporting of these products. Among the actors in the supply chain, conflicts of different natures were identified. Disputes over responsibility for reverse logistics costs stand out, and the authors attribute this indifference mainly to companies not considering LR as a strategic process. Table 1 outlines main actors in packaging waste management.

Table 1. Actors participating in packaging waste management in general

Packaging	Main generating sources	Waste collection	Material sorting	Final destination
Paper	Houses and apartments	City halls	Waste picker's cooperatives	Sanitary landfills
Plastic	Commerce and companies in general	Cleaning companies	Intermediaries (scrap dealers)	Recycling industry
Aluminium	Government organizations	Waste picker's cooperatives		Dumps
Glass	Industry	Autonomous waste pickers		
Other metals	Importers and distributors			

Source: the authors

Reverse logistics is essential to maintain the product's usefulness, even after the end of its first purpose since it provides the use of circularity practices. For example, repairing minor faults is one way to prolong the product's life, refurbishing, remanufacturing or recycling (Batista et al., 2018). These practices collaborate to close the production cycle, and when moving towards Sustainable Supply Chain Management (SSCM), the environment has a positive impact (Zhang et al., 2023). Even broader than the SSCM concept, the Circular Economy provides an opportunity to do business regenerative and restoratively (Li et al., 2024) from the genesis of products and services, balancing the search for financial gains with the search for the reduction of social and environmental impacts (Cerqueira-Streit et al., 2021).

In Brazil, shared responsibility for the product life cycle should be the principle capable of integrating actors in favour of implementing LR, SSCM and CE. In article 6 (sixth) of the Brazilian Policy of Solid Waste, this instrument would supposedly favour selective collection, including waste pickers and implementing reverse logistics (Brazil, 2010). However, Brazil has adopted a different principle from the European one (Extended Producer Responsibility-EPR) and, therefore, has not defined which stakeholder will pay for the packaging reverse logistics system.

Since the law's enactment, business sectors have been exempt from more significant expenses and leave municipal solid waste management at the cost of municipal governments, including post-consumer packaging. Some specific programs are carried out so that companies can demonstrate compliance with the legislation regarding the inclusion of waste pickers and recycling of their products, although in a much smaller volume than what is placed on the market.

The programs in which the National Association of Waste Pickers (ANCAT) establish partnerships with companies are worthy of mention. In these programs, private companies exchange direct investments and training with collectors' cooperatives for proof of correct waste disposal (invoices) (ABIHPEC, 2022).

Similarly, brands such as Braskem®, Coca-Cola®, and Nestlè®, among others, maintain the "Recycling for Brazil" program. Also, in partnership with ANCAT, these companies finance technical advice and make direct investments in some cooperatives in the country. On the other hand, the cooperatives do the work of collecting, sorting, sending for recycling and informing the companies that maintain the amount correctly destined. According to data released by the program, in the last 4 (four) years, they have worked in partnership with almost 12,000 (twelve thousand) waste pickers in more than 1,000 (one thousand) cities participating in this program (RPB, 2021).

Studies of different natures are welcome in this growing area of investigation. According to Roithner & Rechberger (2020), purely quantitative studies on recycling are interesting. However, when complemented with qualitative case studies, they expand their usefulness. After all, the complexity of the problems involving managing urban solid waste (cultural, regulatory, marketing, and technological, among others) deal with a high degree of subjectivity (Jesus & Mendonça, 2018). Qualitative studies help point out the problem and explain the reasons for its occurrence and possible solutions.

2.2 Management challenges for innovation towards Circular Economy.

To move towards this alternative economic model (Circular Economy), Jesus & Mendonça (2018) reiterate the importance of eco-innovation for developing techniques that enable the reintegration of the product into the production chain, minimizing disposal and promoting the use of clean energy. In addition to the possible high costs of implementing eco-innovations, the authors cite senior management's low commitment and the lack of technical skills among the available workforce as factors that make these practices difficult.

When analysing innovation articles that address the Circular Economy, Sehnem et al. (2021) find that the topic "waste management" is the one most worked on by authors. Environmental innovations, such as materials with more significant recovery or recycling capacity, must be sought from the supplier level. At the distributor level, reverse logistics must be systematized with the lowest impact in mind, and the consumption level needs to be worked on to encourage the use of remanufactured, repaired or recycled products. Therefore, innovations in different fields need to be considered, including business models (Sehnem et al., 2021).

According to Linder & Wiliander (2015), circular business models can contribute positively to productivity, as they increase efficiency in the use of resources and tend to generate long-term relationships between stakeholders. Process and product innovations would be necessary to achieve circularity. Therefore, the introduction of not only new technologies but also new ways of doing business is needed (Linder & Wiliander, 2015).

Regarding technologies, it is worth highlighting the potential of Industry 4.0 to contribute to constructing more circular operations. Internet of Things - IoT, blockchain, big data, cloud computing, or cybersecurity comprises a list of tools capable of monitoring the use of products (and packaging) even after consumer use and disposal (Nascimento et al., 2019).

The lack of incentives for research, development, and innovation is directly related to the difficulty of recycling much of the packaging in the market (Ecodesign). Industries tend to maintain standard production, with components that have always been used to keep costs low. Many countries lack government incentives (fiscal or credit) for the industry to search for innovations (EMF, 2013).

Cerqueira-Streit et al. (2023) still remember social factors as challenges since the wealthiest part of the population tends to buy more products (consequently generating more packaging waste) and are not very open to conscious consumption practices. As exchange is one of the strategies for extending the useful life of products, this attitude also depends on cultural and behavioural aspects. Therefore, environmental education is essential (Cerqueira-Streit et al., 2023).

Increasingly restrictive ecological policies pressure organizations to change management strategies and practices, as well as the products and services offered by customers. Overcoming challenges related to the different phases of the product life cycle tends to minimize environmental impacts and maximize innovations that lead the organization to obtain long-term competitive advantages (Pauer et al., 2019).

2.3 The institutionalization process

From the understanding of the expression "Institution" along the lines of Sociology, it is understood that Institutions are norms (formal or informal) that are shared and passed on by the members of a given community. Institutions are characterized by stability and the ability to maintain themselves in the long term, so influencing this set of rules is the objective of many of these actors (Stacey & Rittberger, 2003).

Organizations can influence and be influenced by the context and contribute to constructing a system of values and social order. Government authorities, lawmakers and public opinion are vital factors to be examined in this type of research. After all, institutionalization presupposes legitimation, which refers to converging expectations and actions in a given social context. Something is institutionalized when societal values are internalized and specific actions are considered appropriate or correct (Deephouse, 1996).

The paper of Tolbert & Zucker (1999) is often cited in studies that seek institutional theory as a lens for case analysis, as it offers a general model with a sequence of phases for an innovation to become institutionalized in society.

Driven by the force of laws, technological changes or market competition, innovations stimulate the process of institutionalization that will begin with the pre-institutionalization (or Habitualization) phase. Habitualization occurs when the actors understand the problem's existence and articulate to generate a new arrangement. Usually, the output of this phase comes in the form of laws, policies and incentives (Tolbert & Zucker, 1999). At this stage, organizations can seek to act similarly if they perceive that the innovation caused by an organization has brought benefits to resolving a common problem, isomorphism in the molds described by Dimaggio & Powell (1983).

The Objectification stage is when the idea propagates among the actors in search of a social consensus. Stakeholders start to have similar interests and concerns, and that innovation begins to be incorporated into the values of some organizations. The semi-institutional phase is considered. Finally,

institutionalization is consolidated in the last stage: sedimentation. In this way, maintaining a series of habits and beliefs is guaranteed, perpetuating them over time. There is an alignment of practices between organizations because values are shared, and conflicts decrease because there is a continuous involvement in theorizing and promoting what has been institutionalized (Tolbert & Zucker, 1999).

A greater understanding of the set of rules (formal and informal) that govern society facilitates its functioning, in the sense of helping to conserve (institutionalize) what deserves order and control, in addition to providing for the change of inappropriate behavior for the next generations. In the next section, the methodological choices will be detailed.

3. Methods

The institutionalization not only collaborates to integrate and organize society, as it is the result of a process built by different actors, internalized and transmitted over time. Qualitative research and case studies are standard methodological options for scholars of Institutional Theory. According to Tolbert & Zucker (1999), Institutional Theory was developed free of well-defined metrics or variables. This paper is relevant for future studies, as it offers a framework of institutionalization that proposes a logical sequence. According to the authors, this model serves for empirical applications in analyzing phenomena from the perspective of the Institutional Theory.

As for nature, it is an applied investigation. Qualitative in terms of approach (Miles & Huberman, 1994). Regarding the purposes, it is a descriptive study to report what was observed in detail in the management of packaging waste in Brazil in the transition to the Circular Economy from the perspective of Institutional Theory.

Regarding the technical procedures, the case study was used (Eisenhardt, 1989). The triangulation of data instruments was carried out based on documental analysis and in-depth interviews, with the help of a semi-structured script. The opinions of several stakeholders working in the Brazilian packaging sector were confronted.

Because of the COVID-19 pandemic, several events on the topic were held in remote format. The interview script underwent semantic validation by judges. The selection of judges was based on their well-known knowledge of the subject: all five are PhD professors from different universities with impact publications on related topics. Corrections and adjustments were made after the suggestions of experts.

This public policy encompasses a variety of actors (Jabbour et al., 2014). Therefore, those who participated directly or indirectly in signing the packaging sector agreement were sought. The snowball technique also helped the researchers to gather more qualified respondents. The packaging chain in Brazil has these last two characteristics. The possibility of conducting interviews remotely expanded the researcher's ability to reach a more significant number of Federative Units. At the end, 53 (fifty-three) valid interviews with actors who work directly or indirectly with the packaging chain in Brazil. Table 2 summarizes the main methodological classifications and the tools used to prepare this paper.

Table 2. Research Terminology

Key- words				
Waste management	Circular Economy	Institutional Theory		Packaging
Methodology				
Theoretical-empirical	Qualitative	Applied	Exploratory	Descriptive
Procedure and data analysis				
Case study	Document analysis	Interviews	Documentary research	Content analysis
Tools				
Mendeley	Zoom	NVivo	GoogleDocs	Miro.com

Source: The authors based on Saldanha (2014).

In addition to the interviewees representing the main stakeholders in the chain, it is worth highlighting the broad geographic coverage. Brazil has 27 (twenty-seven) federative units. This research included at least one person from 21 (twenty-one) federative units who work directly or indirectly with solid packaging waste. Table 3 was included, highlighting the three questions that were asked to the 53 participants, resulting in 159 responses for the analysis of this work, specifically on the evolution of the topic in the country. A column shows the alignment with institutional theory and published articles on waste management and circular economy.

Table 3. Questions asked to achieve the research objectives

Phases of Institutionalization	Question	Reference
1ª	Comment on the policies and incentives for organizations to adopt actions to minimize waste generation and combat improper disposal, waste, and other problems that the circular economy would help combat.	(Greenwood et al., 2002; Tolbert & Zucker, 1999; Rutkowski, 2020; Jardim et al., 2021).
2ª	What do you think about the consensus among members of the packaging chain? Could you point out the main divergences?	(Greenwood et al., 2002; Tolbert & Zucker, 1999; Ribeiro & Kruglianskas, 2020; Guarnieri et al., 2020; Pereira et al., 2020).
3ª	Comment on the alignment of processes and policies companies adopt in the packaging chain. What is the role of social control in monitoring actions/goals?	(Greenwood et al., 2002; Tolbert & Zucker, 1999; Almeida & Gomes, 2018 Besen et al., 2017 Cézar-Matos, 2021)

Source: The authors

After transcribing the recorded interviews, content analysis could be conducted (Bardin, 2011). NVivo® allows the reading and classification of speech in codes created by the researchers. The main categories were created a priori, that is, before the researchers went into the field to collect data.

From the literature on Institutional Theory, "Policies and incentives" was the minimum content for the first phase of institutionalization (i.e., Habitualization). Seeking consensus and reducing divergences was the second step to advance (i.e., Objectification), and for this we create the category "Main points of divergence". Finally, to reach institutionalization third phase (i.e., Sedimentation), an "Alignment of processes, policies and social control" is needed, the last category created (Tolbert & Zucker, 1999).

After analyzing the interview transcripts, in the material exploration phase, posteriori categories were developed to group the subjects' opinions according to speech frequency and meaning (Bardin, 2011). In the next section, we present the interpretation and treatment of the results. Both the categories (a priori, and a posteriori) were created based on the literature, the former being broader and the latter more specific.

4. Results and Discussion

4.1. First phase of the institutionalization of EC packaging in Brazil: policies and incentives

Regarding the first phase (habituation or pre-institutionalization), most of the actors in the packaging chain who participated in this research claim that there are no policies or incentives that favor what is advocated by Law 12,305/10. Of these, at least 17 of the interviewees remembered that these instruments are present in the regulations, even though they do not perceive their practical applicability.

Focusing on plastic waste and based on a documentary analysis in Thailand, Wichai-Utcha & Chavalparit (2019) reached similar findings from the present research: Although the country has a regulatory framework and several plans for waste management, the level of reuse and recycling is low. In addition to promoting state intervention with fiscal and economic incentives, the authors believe there should also be high taxation. Another possible measure is the ban on single-use plastic packaging to promote 3R's (Reduction, Reuse and Recycling) actions.

The second most common opinion among those heard by this research is that economic instruments are needed to implement the Brazilian Waste Management Law and take steps toward the Circular Economy. The polluter pays principle, for example, has been present in Brazilian Environmental Law too (Brazil, 2010). Legal instruments such as the polluter pays principle tend to induce behavior that is less aggressive to the environment (Nanodkar, 2018). However, sometimes these fiscal instruments are immersed in confusing legislation that lacks greater coherence regarding recycling.

In Brazil, there is still no differentiated taxation for those who work with Reverse Logistics or Circular Economy practices, neither for companies nor for cooperatives and associations of recyclable materials. Instead of having stimuli, double taxation is a recurring complaint. So, the (re)incidence of taxes for recyclable materials and the absence of economic incentives represent barriers to implementing the Brazilian Policy of Solid Waste with proper socio-productive inclusion, which consequently delays the institutionalization of CE in the country.

Even among those who do not see actions for the first phase of institutionalization of the Circular Economy in Brazil (habitualization), part alleges a lack of political will. In developing countries, political will is still needed to ensure the integration of recyclable waste pickers in the reverse chain. There are several benefits when including this worker in the reverse logistics system, among them the increase in packaging recoverability rates and a decrease in operating costs (Rutkowski, 2020).

Classified as those who do not believe in the existence of incentives due to low political will, one statement stands out. He criticizes the agreements between municipalities and private urban cleaning companies, which would justify the lack of political will for changes towards the Circular Economy. The one identified as CAT4 is a member of the national articulation team of the National Movement of Waste Pickers (MNCR).

> CAT4: It is difficult for us to get into a collection system where a single company earns millions. The mayors do not change these contracts because these entrepreneurs will have to stop or reduce the collection. At the top, the conflict is over the economy, over money. At the bottom, people fight for life. The conflict tends to be more significant.

The Government must act and create adequate policies to solve what the market does not want or cannot solve. Companies will seek to evade legislation until they find economic advantages in following them.

Some findings should be highlighted, concerning to the investigation of the first phase of the institutionalization of CE packaging in Brazil (policies and incentives), based on the content analysis of the speeches of the interviewed stakeholders. The main is the essentiality of the construction and operation of economic, financial and credit instruments, as provided for by Law 12,305/10. Although it was not enough to achieve a full Circular Economy, the expansion of measures currently regionalized would bring positive consequences, such as the increase in recycling rates and consequent extension of the material's useful life.

4.2. Second phase of the institutionalization of CE packaging in Brazil: reduction of conflicts and convergence of interests

About the second phase of institutionalization, the results show that, in general, there is no consensus among the participants in the packaging chain and conflicts are easily observed. Corroborating the results of this research, Ribeiro & Kruglianskas (2020) claim that the low participation of manufacturers, importers and traders is understood as a major barrier to this crucial principle of packaging reverse logistics. Additionally, the authors addressed the existence of "free riders", companies that take advantage of the fact that there is no supervision and, even without complying with the law, are not penalized due to the actions of the government or other companies.

Aspects such as "inaction" or "free rides" by the business community not only generate conflicts but also hinder and discourage compliance with legislation. The federal public servant who coordinates the Brazilian solid waste management consortia (PPF5) is critical.

> PPF5: I see many conflicts. I see reverse packaging logistics as very bad. The private sector spending in developed countries is much smaller than in Brazil. The same companies that spend many resources in Europe do not spend the same here in Brazil. These companies help the waste pickers with some resources and say they are doing their job. They do not do.

Within the analysis of the factors that hinder the semi-institutionalization (phase 2) of institutionalization, it is worth emphasizing the speech space that recyclable material waste pickers have received since the sanction of the BPSW. Law 12,305/10 is also considered innovative for including waste picker´s organizations in corporate and municipal programs for shared responsibility for solid waste management. According to Guarnieri & Cerqueira-Streit (2015), the socio-productive inclusion of this category is able of positively impacting the income and quality of life of thousands of workers who live on the margins of the formal labor market and find sustenance for themselves and their families in urban waste.

However, part of the interviewees mentioned the attempt to formalize the waste pickers as an amplifying factor of conflicts in the reverse logistics systems of packaging in general. They claim that there is an old social exclusion and that historically marginalized people will not be easily accepted by the holders of capital or even by rulers. Not only the fact that cooperatives have started to participate in management meetings has generated conflicts. There is also an understanding that traders and Brazilian civil society are still poorly aware of the consequences of poor waste management.

The regional differences revealed by the inequalities in logistics infrastructure were also remembered as a reason for conflicts between the actors. Dealing with topics such as reverse logistics and recycling is less complex in southern and southeastern states when compared to the rest of the country due to the better highways and more significant presence of recycling industries (Rebehy et al., 2023).

Batista et al. (2019) also identified the lack of public infrastructure as a barrier to collecting and recycling recyclable materials. Although other interviewees had a similar opinion, this type of thinking is evident when analyzing the content of the speech of the FUNASA (National Health Foundation) server located in Boa Vista-RR (Amazon jungle), here identified as PPF3:

> PPF3: We are far from consensus. The main divergence is this: the question of social equity. The waste picker is the most fragile part because the "intermediary" who buys from him is a millionaire and the industrialist who buys from the intermediary is a multi-millionaire. Due to the infrastructural issue and financial capacity, they still cannot go much further. The law has to help reach a consensus, but... those companies pay for the Governor's campaign, understand?

Although they could be included in the category "Industry exempts itself from responsibilities", greenwashing practices, inadequate design and work overload and costs for the municipality were also reported by the interviewees. As these actors were more specific in their speech, it was decided to present separately from the broader category. Figure 1 illustrates the factors that tend to generate disputes between participants in Brazil's packaging chain in general. In a didactic way, the aim is to highlight the results pointed out by the participants of this research.

Figure 1. Main points of conflict in the packaging Reverse Logistics chain

Source: The authors

In addition to other impacts, when trying to maintain the status quo and not absorb the costs and reverse logistics activities, industries also strain municipal waste management systems. City halls are increasingly pressured in the operational and in the budgetary sense if the companies that place the products and their packaging do not engage in collecting them.

Recovering the teachings of Linder & Wiliander (2015), establishing trusting relationships is fundamental to building a circular business model. After aligning processes and technology, agents tend to obtain productivity gains by closing the production loop.

After analyzing 101 scientific articles relating the Circular Economy to emerging technologies, Provensi et al (2024) found that stakeholder engagement is essential. The government should lead the shift towards the Circular Economy by providing tax incentives to those who act pioneeringly and adopt circular measures. In this way, the creation of actions in networks such as co-creation hubs, industrial symbiosis, circular clusters, and eco-industrial parks, among other forms of collective organization, is encouraged.

To investigate the situation of circularity in the packaging sector in Brazil, concerning the second phase of institutionalization of the CE, the interviewees were asked about the existence of consensus and the main differences. The responses were unanimous in indicating that there is no consensus and there are many points of conflict between stakeholders. Thus, it appears that Brazil is not in the second phase (objectification) of the EC of packaging in general.

4.3. Third phase of the institutionalization of CE packaging in Brazil: alignment of processes, policies and social control

The third stage of institutionalization can also be called sedimentation, according to Tolbert & Zucker (1999). A minority of respondents perceive actions of standardization and social control, a portion praises the work of control bodies, such as state sanitation companies and State Public Ministry (MPE).

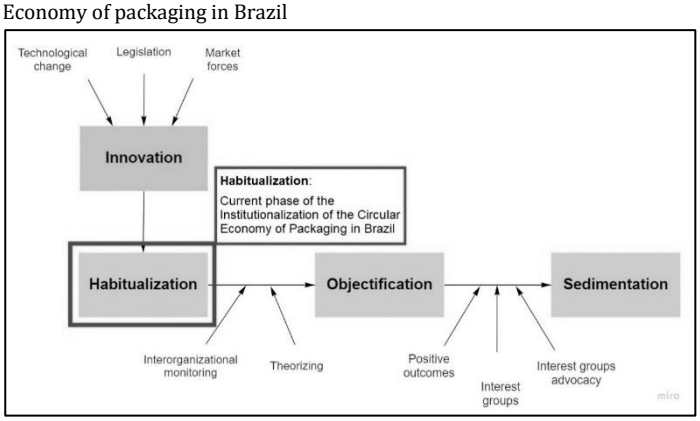
Most respondents cannot perceive harmony between policies and waste management programs in Brazil, as well as control by society. Some of them claim to lack reliable data and collection mechanisms. Pereira et al. (2020) comment on the fragility of SINIR (National Information System on Solid Waste Management) in the face of regional inequalities present in the country. The lack of trained personnel and adequate equipment, make it difficult for many municipalities to feed the system with feasible data. In their opinion, the more industrialized the state, the more consistent the completion of the SINIR tends to be.

Nascimento et al. (2019) recommends using Industry 4.0 technologies to facilitate increased recycling rates and circularity more broadly. However, Brazil still has a low logistical and technological infrastructure and ambiguous databases and personnel with little training in dealing with these technologies.

Most interviewees believe that there is no alignment of practices, policies or social control because primary civil environmental education is lacking. After all, policies need to be discussed before they are even implemented. If the people are involved even before it is sanctioned, citizens tend to want to participate in decisions. Selective collection in households and the participation of waste pickers for collection and sorting are fundamental for the Circular Economy to occur in Brazilian territory (Guarnieri & Cerqueira-Streit, 2015).

As it occurs in Brazil today, the management of solid waste allocates public money to various actors who profit from not adopting circularity measures. Industries, municipalities and urban cleaning companies (stakeholders influential) shy away from greater changes while waste pickers, NGOs, universities and civil society (considered less significant stakeholders) suffer the consequences of an excluding and polluting system. Given the results obtained, the discussion with the literature and the findings made, the framework of Tolbert & Zucker (1999) was adapted for the case studied (Figure 2).

Figure 2. Process and current phase of institutionalization of the Circular Economy of packaging in Brazil



Source: Adapted from Tolbert & Zucker (1999)

Some challenges are related to the population's lack of awareness, lack of political will on the part of government officials, lobbies and obscure contracts with urban cleaning companies. Other challenges are logistical infrastructure and the dismantling of the national law. These barriers lead this research to conclude that Brazil is in the phase of habitualization of institutionalization of the Circular Economy, based on the perception of stakeholders interviewed, and without the intention of generalization. After all, there are still many conflicts between the actors, strong resistance from interest groups, and a low level of alignment of practices and social control. The categorization of the interviewees' responses is detailed in the Appendix of this article.

5. Final Remarks

This paper intended to analyse the stages of institutionalization of the Circular Economy of packaging in Brazil. We found that Brazil is in the phase of habitualization of institutionalization of the Circular Economy of packaging. For full institutionalization, it still necessary to overcome the resistance of coalitions/interest groups and make society itself, inspecting such behavior. Historically in Brazil, industries have enough influence and power to manipulate public policies. Additionally, the attempt to include waste pickers (for legal compliance) tends to be an amplifier of conflicts in the supply chain, considering that, for decades, this category was distant from decision-making.

The study contributes to the field by improving understanding on Circular Economy implementation in emerging economies, in a high-impact and relevant sector, as it explores environmental and social benefits from stakeholders' perspectives. It also offers a description of three phases of institutionalization. The main theoretical contribution of the study is associated with the systematization of evidence that signal the current stage of institutionalization of the CE of packaging in Brazil. The practical contribution is associated with the identification of barriers and challenges that hamper institutionalizing packaging circularity. Such findings generate relevant contributions to different stakeholders, namely:

a) Government: which needs to advance in the official formalization of legal guidelines for the implementation of the Circular Economy in the most different sectors and levels. Specific public policies for regions and sectors to accelerate this transition;

b) Sectorial chains: the need to articulate between the links in the production chains to find mechanisms to overcome the barriers and challenges of institutionalization in the country.

c) Sectorial entities: the need to create awareness campaigns, cooperation, engagement and understanding of barriers and challenges, to create strategies to overcome them;

d) Educational institutions: to provide research that can support the advancement of the CE in the country at different levels;

e) Citizens in general: the study highlights a set of findings that should serve as a reflection for society in general to change behaviors. For this to be possible, public policies and legal guidelines are necessary.

The limitations of the study are associated with the difficulty of carrying out on-site visits to view the reality of the sector, directly associated with the restrictions imposed by the pandemic period. For future studies, we recommend comparing with other developing countries, which would deepen discussions to find local and global solutions. Finally, studies are also advised to identify facilitators (applicable in the context of emerging economies) for implementing innovations towards the development of circular businesses.

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Software				
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