

Job precariousness: supply chain management in a waste pickers association

Precarização do trabalho: gerenciamento da cadeia de suprimentos em uma associação de catadores de materiais recicláveis

Precariedad del trabajo: gestión de la cadena de suministro en una asociación de recolectores de materiales reciclables

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Resumo: Waste pickers are key players within municipal solid waste management and an important link in the recycling chain. Waste pickers perform their activities in precarious conditions: they work in bad weather; run the risk of traffic accidents; come in contact with insects that transmit disease and suffer from weight overload. These conditions are aggravated by the lack of labor rights and guarantees, as well as the instability of income and exploitation in commercial processes receiving derisory prices for materials. In this context, the present research seeks, in an interdisciplinary way, the supply chain management interface with the aspects that constitute the precariousness of the pickers' work, aiming to identify and foster proposals for infrastructure and supply chain improvements of an association of recyclable waste pickers through dialogue and construction with the workers concerned. For this, the ergonomic work analysis was used for information gathering and diagnosis that will subsidize the construction of a process map through the SIPOC tool. From the documentary analysis of the project, the result of part of the association's production process was reached, that is, its recovery of recyclables in 2018, which reached a volume of 141,893.7 kg. This study sought to provide moments of reflective discussion with the pickers about the organizational processes of the association, in order to collectively construct proposals that enable better working conditions for them.

Palavras-chave: waste pickers; supply chain; precariousness.

Abstract: Os catadores de materiais recicláveis são atores fundamentais dentro da gestão dos resíduos sólidos municipais e um importante elo na cadeia da reciclagem. Os catadores realizam suas atividades em condições precárias: trabalham sob intempéries; correm o risco de acidentes de trânsito; entram em contato com insetos que transmitem doenças e sofrem com sobrecarga de peso. Tais condições se agravam diante da carência de direitos e garantias trabalhistas, além da instabilidade de rendimentos e exploração nos processos comerciais, recebendo preços irrisórios pelos materiais. Nesse contexto, a presente pesquisa busca, de forma interdisciplinar, a interface da gestão da cadeia de suprimentos com os aspectos que configuram a precarização do trabalho dos catadores, tendo como objetivo identificar e fomentar propostas de melhorias na infraestrutura e na cadeia de suprimentos de uma associação de catadores de materiais recicláveis, a partir do diálogo e da construção com os trabalhadores em questão. Para tanto, foi utilizada a análise ergonômica do trabalho para o levantamento de informações e elaboração de diagnóstico que subsidiou a construção de um mapa dos processos por meio da ferramenta SIPOC. A partir da análise documental do empreendimento, chegou-se ao resultado de parte do processo produtivo da associação, ou seja, sua recuperação de recicláveis no ano de 2018, que atingiu um volume de 141.893,7 kg. Buscou-se, com a presente pesquisa, proporcionar momentos de discussão reflexiva junto dos catadores sobre os processos organizativos da associação, de forma a construir coletivamente propostas que possibilitem melhores condições de trabalho para eles.

Keywords: catadores de materiais recicláveis; cadeia de suprimentos; precarização.

Resumen: Los recolectores de material reciclable son actores clave en la gestión de los residuos sólidos en los municipios y un eslabón importante en la cadena de reciclaje. Los recicladores llevan a cabo sus actividades en condiciones precarias: trabajan en condiciones climáticas adversas; corren el riesgo de sufrir accidentes de tráfico; entran en contacto con insectos que transmiten enfermedades y sufren sobrecarga de peso. Estas

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condiciones se ven agravadas por la falta de derechos y garantías laborales, además de la inestabilidad de los ingresos y la explotación en los procesos comerciales, que reciben precios insignificantes por los materiales. En este contexto, la presente investigación busca, de manera interdisciplinaria, la relación de la gestión de la cadena de suministro con los aspectos que configuran la precariedad del trabajo de los recicladores, con el objetivo de identificar y promover propuestas de mejoras en la infraestructura y la cadena de suministro de una asociación de recolectores de materiales reciclables, desde del diálogo y la construcción con los trabajadores en cuestión. Así, el análisis ergonómico del trabajo se utilizó para recopilar información y elaborar un diagnóstico que apoyó la construcción de un mapa de los procesos a través de la herramienta SIPOC. Desde el análisis documental de la empresa, se alcanzó el resultado de parte del proceso de producción de la asociación, es decir, su recuperación de materiales reciclables en 2018, que alcanzó un volumen de 141,893.7 kg. El intento con la presente investigación fue proporcionar momentos de discusión reflexiva con los recicladores sobre los procesos organizativos de la asociación, a fin de construir colectivamente propuestas que les permitan mejores condiciones de trabajo.

Palabras clave: recolectores de material reciclable; cadena de suministro; precariedad.

1 INTRODUCTION

The growing generation of solid waste is one of the most worrying environmental problems of contemporary cities, such increase is the result of population growth coupled with changing habits of the population. In addition, industrialization and technological development contribute as more and more durable non-durable goods are being produced that quickly return to the environment and consequently generate social and environmental impacts through inadequate disposal, such as soil, air and water pollution, as well as the proliferation of vectors of diseases that interfere with the population's quality of life.

Given this scenario, it is of utmost importance that the solid waste management in the municipalities be performed properly, in which the public administrations must provide alternatives for proper management, such as selective collection, composting, as well as the environmentally correct final disposal. From this management perspective, waste pickers are fundamentally and incisively inserted, recovering most of the recyclable waste in the municipalities. It is estimated that waste pickers are responsible for collecting approximately 90% of all recyclable material generated in the country (GALON, MARZIALE, 2016).

The work of waste pickers is provided for in Law 12.305 / 2010, which instituted the *National Policy of Solid Waste*, in which they are recognized as important actors in the management of this waste. This policy provides in its instruments to encourage the creation and development of cooperatives or other forms of association of waste pickers, prioritizing Union resources for municipalities to implement selective collection with the inclusion of waste picker enterprises (BRASIL, 2010).

Thus, the present study was performed in an association of waste pickers located in a municipality in the extreme south of the state of Minas Gerais.

The collectors of the association face similar conditions to the other collectors of the country, that is, they work in bad weather, as well as develop their activities without proper protection, that is, in the absence of Personal Protective Equipment and collective.

It is worth noting that the associates face a situation similar to the reality of most of the country's waste pickers, that is, they do not have labor rights and guarantees, such as fixed salary and retirement, and they do not have social security protection if they suffer work accidents or have any health problem.

The pickers of the association in question are doing their work due to the absence of rights and adequate working conditions, which constitute precariousness in their work.

Given this scenario, this research seeks in an interdisciplinary way, the interface of supply chain management with the aspects that configure the precariousness of the pickers' work, aiming to identify and foster proposals for improvements in the Association's infrastructure and supply chain, from the dialogue and construction with the workers in question. As specific objectives we will seek to: describe the productive and administrative processes carried out by the enterprise, from selective collection to the final destination of recyclable materials; and, identify the aspects that configure the precariousness of the work performed by the pickers.

Therefore, the importance of this research is due to the need to understand the dynamics of the productive processes of the association and to seek improvements, aiming at reducing the precarious working conditions experienced by waste pickers. It is noteworthy that they contribute significantly to the improvement of the environmental quality of the municipality, as well as effectively influence the local public health. It is necessary to look at the work of these collectors, as they effectively contribute to local and regional development by generating employment and income, as well as reducing the volume of recyclable material that is sent to the regional landfill.

In the introduction, we presented the whole concept of our study. Subsequently, we further develop the theoretical concept regarding the management of solid residues and the public policies involved, as well as their relationship with the relevant aspects of the picker's work and the precarious conditions to which they are daily exposed. Finally, we contextualize the management of the supplies of the recycling field. Then, we describe the methodology employed in our study and show the results of the analysis, from the precarious work of the pickers to the supply chain. We conclude with suggestions to overcome the challenges faced by the pickers in their daily activity.

2 THEORETICAL REFERENCE

2.1 Solid waste management and public policy

One of the biggest problems currently facing municipalities with regard to sanitation is the growing generation of solid waste, which in turn is directly influenced by population growth, a generation that is constantly growing mainly due to the consumption habits adopted by the population, accelerated process of urbanization and technological transformations (BESEN, 2011).

Based on the high generation of municipal solid waste in the municipalities, selective collection programs are implemented in order to reduce the volume of materials that are sent to final disposal. The selective collection programs can be executed following different models, that is, they can be operated in isolation by the municipality, through the exclusive work of the pickers or by establishing partnerships between the municipalities and the pickers' associations / cooperatives. The latter, in turn, has been adopted by several municipalities leading to economic and social gains (CORNIERI, 2011).

From the environmental point of view, this is a gain that translates into an increase in the useful life of the final disposal areas. In addition to this factor, selective collection still contributes to the reduction of the consumption of natural resources, considering that the materials sent to the recycling return to the production cycle, in addition to reducing pollution that consequently brings risks to the health of the population (VIANA; OLIVEIRA, 2012).

To guide the solid waste management in the municipalities there are legal instruments that establish the prerogatives. In 2010, Law 12.305 was enacted, establishing the *National Policy of*

Solid Waste. This legal instrument highlights the achievement of waste pickers who were inserted as important actors of waste management in the municipalities. Through the law the municipalities must present the *Municipal Plan for Integrated Solid Waste Management*, taking into account the implementation of selective collection with the priority of participation of cooperatives or waste pickers associations in order to have access to Union resources (BRAZIL, 2010).

2.2 Waste pickers and the precariousness of the work

Waste pickers have a long history of working in the country, which in turn reached a key benchmark with the founding of the *National Movement of Waste Pickers* in June 2001, responsible for acting in the political representation of the category. However, previously the origin of the movement individuals already circulated around the cities collecting materials that could be traded for income generation.

In 2012, *Ipea* (Institute of Applied Economic Research) conducted the study that was entitled *Diagnosis of solid waste pickers*, and in that study based on data from business, public and *National Movement of Waste Pickers*, it is estimated that there are between 400 and 600 thousand waste pickers in Brazil.

The work carried out by waste pickers involves economic, environmental and social aspects. It is noteworthy that from the environmental bias society benefits from their work, either by reducing the consumption of natural resources, or by contributing to increase the useful life of the final disposal areas. From an economic point of view, they turn the waste into a commodity to survive and supply the recycling market. Finally, from a social point of view, historically they are objects of marginalization and prejudice and lack of labor rights (MAGALHÃES, 2012).

In addition to contributions to public health and sanitation, the benefits of waste pickers' work include job and income generation, as well as reduced municipal waste management costs (KRUPP; SILVA; VIEIRA, 2017).

Even in view of the relevant environmental and social contribution of the work carried out by waste pickers, due recognition and appreciation to date have not been effectively granted to these workers. Informality, exploitation by the recycling industry and precarious conditions mark the trajectory of this working class.

Subordinated and integrated into the process of capital accumulation, the work of the pickers is required by it, bearing, as a productive force, the mark of capitalist relations of production. Its organization is determined by the capital involved in the recycling business, although the social relationship of exploitation over labor does not appear formalized in contracts that set wages, hours or even a routine that disciplines it. (BOSI, 2008, p. 113).

The discussion about the precariousness of labor is strongly marked by the structural crisis of capital that occurred in the mid-1970s and the consequences of its restructuring. From the structural crisis, capitalism sought its restructuring of the pattern of accumulation, especially by the transition from the Taylorist and Fordist pattern to new forms of flexible accumulation, especially toyotism. The Japanese Toyotista model with its features of flexible accumulation and lean company, seeks to make the most of potentiality and productivity without increasing the contingent of workers. Therefore, some of the results that reverberated in the world of work from these mutations are: deregulation of labor rights, increased fragmentation of the working class, destruction of class unionism, precariousness and outsourcing of work (ANTUNES,

1999). Borsoi's (2011) corroborates Antunes when contextualizes the precariousness and its consequences not only as characteristics of the present moment of the capitalism, but also as a mark in its evolution process.

The issues related to the precariousness of work and the profound environmental degradation are entirely related to the work carried out by the waste pickers, who seek their daily living while contributing to minimize the negative effects related to the way society treats solid waste.

Two manifestations are more virulent and serious: the unparalleled destruction and / or precarization of the modern working age of human force and the increasing degradation in the metabolic relationship between man and nature, driven by logic focused primarily on the production of goods. (ANTUNES, 2001, p. 38).

The issue of the precariousness of the pickers' work is approached by several authors from different perspectives. The precariousness process of these workers through the evolution and maintenance of the capitalist system is pointed out in most studies where it is signaled by (BORSOI, 2011; COSTA; CHAVES, 2013). Another bias related to the precariousness of the pickers' work is configured by factors such as long working hours performed by them, without guaranteed minimum income and without social security of any kind, as pointed out by (ROSS; CARVALHAL; RIBEIRO, 2010).

The activity of the collection presents several potential risks to the health of the pickers that can be of innumerable natures. It is noticed that they work exposed to heat, humidity, rain, cold, are at risk of traffic accidents, animal attacks, contact with insects, as well as inhale gases that exude solid waste, in addition to weight overload to which they are submitted, because as a result of the unhealthiness of the activity, their health, quality of life and their right to citizenship may be compromised (OLIVEIRA, 2011).

The reality experienced by the vast majority of the country's waste pickers is marked by the lack of labor rights and guarantees, such as retirement, fixed salary and unemployment insurance. Regarding accidents at work, as well as health problems also do not have labor protection, in addition to low valuation and social recognition for the environmental service provided (MEDEIROS; MACÊDO, 2006).

2.3 Supply Chain Management

Several techniques and tools of production engineering can contribute to the improvement of the processes and efficiency of the enterprises. Supply chain management according to Slack (2002) is about supply chain management in general, involving connections with both suppliers and customers, so that the final product or service is delivered with quality efficiently, observing judiciously the production process.

The characteristics of solidarity-based economic enterprises (EES), as is the case of collectors associations, differ from conventional companies, so when analyzing the supply chain of such EES it is necessary to take into account the particularities of such organizations. The definition of solidarity supply chain is described below:

A network of connected and interdependent organizations, with the presence of self-managed organizations, working jointly, in solidarity and mutual cooperation, to control, manage and improve the flow of raw materials and information from suppliers to end customers for the

purpose of enable collective initiatives and the creation of jobs and income. (GEORGES, 2010, p. 11).

From the perspective of supply chain management the understanding of productive processes through process mapping is of great relevance and it comes to “A complete visualization tool and consequent understanding of the activities performed in a process, as well as the interrelationship between them and the process. Through the mapping process it becomes simpler to determine where and how to improve the process” (CORREIA; ALMEIDA, 2002, p. 2).

The study of the supply chain of waste picker enterprises was carried out to analyze a cooperative and a chain composed of 8 cooperative members of a Network respectively. (DE ARAÚJO, 2013; GEORGES; LHAMA; AMORIM, 2009).

The evaluation of production processes from the construction of process maps is a practice that was adopted for understanding and analysis in waste picker enterprises. (LOBATO; LIMA, 2010; VINÁLES *et al.*, 2017).

3 METHODOLOGICAL COURSE

For the development of this research, an interdisciplinary bibliographic survey on work precariousness, supply chain management, solid waste management and the contextualization of the class of recyclable material collectors in books, dissertation and thesis banks, periodicals and annals of events was conducted.

To subsidize the collection of information and understanding the operation of the enterprise, we use the Ergonomic Work Analysis. This methodology is not intended to simply apply methods, take measurements, make observations, conduct interviews with workers. It must seek transformations of the work from the construction involving the different actors involved considering their points of view (GUÉRIN *et al.*, 2001).

Visits were made in the enterprise that made it possible to observe the work processes in addition to making photographic records to support the analysis. In a complementary way, a documentary research was carried out, as well as interviews with 2 collectors and 1 collector who make up the project's board of directors in order to contribute to the understanding of the project's supply chain. The pickers and the pickers were chosen for their full knowledge of the production process and their availability of time based on the work dynamics of the group. The categories addressed in the interviews were related to: production processes, that is, the stages of the supply chain and who were the related actors; issues involving the execution of activities and social security.

After the data collection stage, the SIPOC tool was applied, which is an instrument to perform the process mapping that encompasses five main elements: suppliers; the required entries; the process in question; process outputs and ultimately process customers that may be internal or external to the organization. The application of SIPOC sought to clarify the vision of the association's production chain, as well as signaling the elements that constitute the precariousness of the work carried out by waste pickers.

4 RESULTS AND DISCUSSIONS

The association was founded in 2008 and currently has 14 members, 07 women and 07 men. The project conducts selective collection, sorting, processing and proper disposal of recyclable materials, as well as awareness raising processes for selective collection. It is important to emphasize that the project is part of a Marketing Network that aims to strengthen the political, social and commercial associations and cooperatives in the region.

The association currently does not receive payment of any sort for the services contracted by the municipality; however, the association conducts selective collection throughout the urban area and part of the rural area of the municipality with its own vehicle in partnership with the city hall, which provides the association with a shed (Figures 1 e 2) for the development of its activities. The city hall also financially supports the infrastructure and the vehicle for selective collection.

Figure 1 – Sorting and storage area without lateral closing and paving



Source: Authors (2019).

Figure 2 – Material stored in opened areas



Source: Authors (2019).

The shed, as can be observed, has structural conditions incompatible with the activity performed, considering that the shed provided was not built specifically to the association's activities. Due to the poor structural conditions, namely lack of lateral closing and paving, the pickers work under precarious conditions such rain and high temperatures exposure, especially during sorting. In addition to the precarious work conditions, part of the material are stored in opened spaces, which results in quality loss, impairing the negotiation process and, consequently, the associates' income.

From the analysis of the project documents, it was found that the association recovered approximately 141,893.7 kg in the year 2018, which corresponds to an average of about 11 tons of recyclables per month, and its members had an average income of less than a minimum wage.

Based on the information gathered, we use the SIPOC to organize the association's supply chain map, as shown in table 1 below:

Chart 1 – Supply Chain Map

SUPPLIERS	INCOMES	PROCESS	OUTCOMES	CLIENTS
- Residences; - Trades; - Industries; - Public offices.	- Plastic – 12 categories; - Papers – 03 categories; - Glass; - Metal – 09 categories; - Waste; - Organic waste.	- Selective collect; - Unloading; - Training; - Bundling; - Packaging; - Commercialization;	- Bales; - Kg;	- Commercial mediator - Industry;

Source: Authors (2019).

By analyzing the association's sources of raw materials, we identified the main suppliers as homes, local businesses, small industries, as well as municipal public agencies. By analyzing the supply chain of 8 cooperatives Georges, Lhama and Amorim (2009) found the sources of supply, that is, the suppliers of the chain similar to the enterprise of the present research, while it is possible to evidence differences in the commercialization and the characteristic. This is common in waste picker enterprises due to their characteristics and territorial dynamics.

The main wastes collected by the association are: the potentially recyclable, divided into 3 types of paper (corrugated cardboard, mixed paper and carton packages); 12 types of plastics (ABS, PVC, green PET, transparent PET, dark amber PET, white HDPE, colored HDPE, white PP, colored PP, white plastic wrap, colored plastic wrap and PS); 09 types of metal (iron scrap, copper, white metal, yellow metal, aluminum can, hard aluminum, heavy aluminum, stainless steel, iron stainless steel) separated into categories and colors to be commercialized; and glasses, which are commercialized without any separation. The relation of the materials was indicated by the association's members and can vary according to the enterprise and locality. Other materials that cannot be recycled are also collected and sent to the local landfill by the municipal administration, along with organic waste, usually food leftovers.

By analyzing the supply chain of a De Araújo Cooperative (2013), it identified as its main stages the collection, sorting, separation, pressing and commercialization. In general, the phases of the production process found by the author are similar to the activities developed by the

enterprise of the present study, differing mainly in the screening process that in the cooperative analyzed by the author, the pickers use the mat and the association object of our study fixed sorting tables are used

The process carried out by the association we studied agrees with the process of other pickers' associations identified by Oliveira and Lima (2012), consisting in stages, namely collection, sorting, pressing and commercialization. In this association, the process begins with the selective collection in the urban area and partially in the rural area of the municipality, waste unloading in the association and material sorting.

Most of the waste pickers are involved in the sorting. Roughly half of the members participate in this stage, which is a reality similar to the one found by Oliveira and Lima (2012), based on a study in 03 enterprises. This is the most time-consuming activity and the greatest bottleneck in the productivity due to the different categories of materials requested by the market. According to Oliveira; Parreira and Lima (2009), waste sorting is the greatest challenge in increasing the productivity, since it is a manual process. This corroborates the process of the association we studied, which operates in fixed tables with the aid of small sacks and small barrels for each material category, which are stored inside big bags until baling.

Subsequently, the waste are prepared to be bailed, the stage, in which the papers and plastic are compacted with the aid of a press. Each bale usually has between 100 kg and 250 kg of weight, according to the category of the material. A waste picker executes the process, operating the press machine and counting the bales to be commercialized.

Glasses and metals are sorted and stored without pressing, and commercialized by the association when the amount reaches around 5 tons. Then, the buyers collect monthly the material with trucks, helped by the pickers. The materials are checked out after weighting and registering for later commercialization, which takes place monthly. In the commercialization, plastics and papers are loaded together, while glasses and metals are loaded and commercialized monthly to different clients due to the great amount of these materials.

With respect to the main clients of the venture, it currently markets with local intermediaries, and has already carried out marketing experience with an industry via Network articulation with other associations and cooperatives in the region.

Although the association analyzed in this study has already marketed directly with a manufacturing industry, it still suffers from difficulties in marketing all categories of materials to the detriment of the low volume from selective collection, which leads the association to trade in materials, mixed loads with local intermediaries who pay lower prices than those manufacturing industries. It is important to highlight that the pickers' remuneration comes only from the commercialization of recyclables, a process characterized by fluctuations in both volume and commercial values, and therefore does not guarantee minimum income to these workers, a process that indicates an element of precariousness as indicated by (ROSS; CARVALHAL; RIBEIRO, 2010).

From the understanding of the activities performed by the pickers within their supply chain, it was possible to show that they do not use personal protective equipment and collective at any stage of the production process.

The association's pickers also do not have social security, that is, they do not make social security contributions to the detriment of monthly withdrawals that do not reach the value of a minimum wage, as well as do not enjoy labor rights, which corroborates the research by

Medeiros and Macêdo (2006) regarding the absence of labor protection and guarantees. Coelho *et al* (2016), in a study in a women pickers' cooperative, identified a similar situation regarding the social security contribution, with pickers finding difficulties in keeping up the payment of the contribution considering the low monthly income.

From this perspective, it is essential to understand the elements that correspond to precarious work:

Precarious work is performed under one or more conditions: a) part-time day / week / month, with long working hours, with payment for production / service; b) without guarantees of stability or protection against exemptions, defined hours, weekly rest and paid vacation, performed in unhealthy conditions, without social security, unemployment insurance, retirement, and maternity leave, sick leave, without accidents at work, among other things. It is precarious for subjecting the worker to risky living conditions, to the cruel dominance of market competition, without collective actions of confrontation, without security of social coverage in the future or when the labor force can no longer be available. (BARBOSA, 2007, p. 40).

Therefore, it can be seen from the analyzes performed that the elements identified in the association corroborate with part of the requirements identified by the authors mentioned above regarding the precarious working conditions of the collectors of the present research, even though these are components of the world of work in general and not exclusive of solidarity-based economic enterprises.

However, even in the face of all the challenges present in the reality of the association, we cannot fail to point out the relevance of the organization of solidarity-based economic enterprises, such as the association in question, which has in their emergence and maintenance the prospect of fighting and countering inequalities and social exclusion generated by the capitalist hegemonic system, through the generation of work and income by previously excluded workers (DAGNINO, 2014).

From the analytical point we find ourselves, the association presents itself as an element of active resistance that still suffers the historical and contemporary consequences of the precariousness of work from the evolution of the capitalist system, materialized in the identified working conditions.

However, in the case of an enterprise that acts mainly in the provision of a public service, the path of establishing effective public policies starting from the fulfillment of the *National Policy of Solid Waste*, reverberating in the local territory, and systematized in a contractual manner by the provision of such services may be present as a possibility of evolution of this framework.

5 FINAL CONSIDERATIONS

With the realization of this research, it was possible to identify fundamental elements related to the association's supply chain, as well as the factors that suggest the precariousness of the work performed by the pickers.

From the analysis of the chain we identified the main stages of the productive process of the association, as well as the other actors involved in that chain and the roles they play. One of the main challenges for the project is the changing flow of material input demand, seeing that it is a result of the municipal selective collection process and its main characteristic is the oscillations that directly impact the pickers' income. Another element that interferes in this

process is the output of the association's products that suffer variations in its marketing processes to the detriment of the inconsistency of the market that dictates the product value rule, mainly because the negotiations are conducted with intermediaries and do not reach materialize with manufacturing industries.

Regarding the objectives of identifying and proposing improvements, we could observe factors in the supply chain that can be reorganized to contribute with de processes executed by the association's pickers.

Considering the collection of the materials, namely selective collection, which involves the chain suppliers and the materials provided, we suggest the association to map the suppliers and contact possible partners still not included in the program to increase the amount of recyclable material unloaded in the association, as well as organizing campaigns focusing on raising awareness of selective collection of waste and on reducing residues. Regarding the commercialization, practices aiming at the chaining engagement with other enterprises could contribute to the commercial access to transformation industries, adding value to the material commercialized by the association.

Regarding the objective of understanding the risks to which the pickers are exposed, we could observe the absence of Personal Protective Equipment, as well as of social security, especially due to the low monthly income, which is lower than the minimum wage, being the work at the association their only income source.

The deepening of the understanding of the productive processes conducted by the association will allow us to reflect together with the workers how the actions are linked and how this reverberates in the pickers' working conditions and are related to precariousness, and if it is somehow possible to rethink stages of the production process that enable improvements in their working conditions. The analysis of the elements that shape the precariousness and their relationship with the supply chain may allow the identification of their origins within the association's working context and point paths for possible.

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