



PESQUISA EM COOPERATIVAS RECICLÁVEIS DE BAURU

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RESUMO

A gestão de resíduos é um dos principais problemas ambientais relacionados ao viés social e econômico em todo o mundo. No Brasil, após o Plano Nacional de Resíduos sólidos, as cidades buscaram se adaptar às exigências, uma delas é a inserção de cooperativas de triagem recicláveis na gestão integrada de resíduos sólidos. Este trabalho propôs analisar a situação de duas cooperativas, COOPECO e COOTRAMAT, de recicláveis em Bauru, São Paulo. Os dados foram coletados por meio de entrevistas e foram tratados para obter o diagnóstico de cada cooperativa, passando pela caracterização dos materiais comercializados, diagnóstico estrutural, como também seu funcionamento (logística). Algumas propostas podem ser implementadas, como a atribuição da gestão operacional de todos os Ecopontos existentes, a fim de gerenciar cooperativas, que expandirão esse serviço ao público e otimizarão a Educação Ambiental; construir um galpão central para armazenar materiais recicláveis secos dessas duas cooperativas e potencialmente outros parceiros para marketing direto com as indústrias de processamento após a triagem e prensagem. Outras alternativas a serem consideradas são a instalação de equipamentos no armazém, como extrusora de plástico, para agregar valor à diferente tipos de plástico, como a produção de mangueiras e conduítes; cessar o gerenciamento da coleta seletiva domiciliar e, gradualmente, permitir a COOPECO e a COOTRAMAT a gerenciarem a coleta seletiva, pois essa atitude pode aumentar o número e a qualidade dos materiais secos; ampliar as discussões com o Conselho Municipal para o Desenvolvimento do Meio Ambiente de Parcerias Público-Privadas envolvendo o gerenciamento de resíduos sólidos em Bauru, com participação integrada de cooperativas de trabalho.

Palavras-chave: Manejo de resíduos sólidos. Caracterização em cooperativas. Cooperativas de reciclagem de resíduos secos.

RESEARCH IN BAURU RECYCLABLE COOPERATIVES

ABSTRACT

Waste management is one of the major environmental problems related to social and economic bias worldwide. In Brazil, after the National Solid Waste Plan, cities seek to adapt to the requirements, in which one of them is the insertion of recyclable sorting cooperatives into the integrated solid waste management. This work proposed to analyses

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the current situation of two cooperatives, COOPECO and COOTRAMAT, of sorting of recyclables at Bauru, São Paulo. The data were collected by means of identification and were treated to obtain the diagnosis of each cooperative, passing through the characterization of the commercialized materials, structural diagnosis, as well as its functioning (logistics). Some proposals can be implemented, such as the assignment of the operational management of all existing Eco points in order to manage cooperatives, that will expand this service to the public and optimize Environmental Education; to build a central shed to store dried recyclable materials of these two cooperatives and potentially other partners for direct marketing with the processing industries after sorting and pressing. Other alternatives to be considered are to install equipment in the storehouse, as a plastic extruder, to add value to different types of plastic, such as the production of hoses and conduits; to cease the management of home-by-home selective collection and gradually to allow COOPECO and COOTRAMAT to manage selective collection since this attitude can increase the number and quality of dried recyclables; and to expand discussions with the Municipal Council for the Development of the Environment of Public-Private Partnerships involving the management of solid residues in Bauru, with integrated participation of labor cooperatives.

Keywords: Solid waste management. Characterization in cooperatives. Dry recyclable sorting cooperative.

INVESTIGACIÓN EN BAURU COOPERATIVAS RECICLABLES

RESUMEN

La gestión de residuos es uno de los principales problemas ambientales relacionados con el sesgo social y económico en todo el mundo. En Brasil, después del Plan Nacional de Residuos Sólidos, las ciudades buscan adaptarse a los requisitos, en el que uno de ellos es la inserción de cooperativas de clasificación de reciclables en la gestión integrada de residuos sólidos. Este trabajo propuso analizar la situación actual de las cooperativas, COOPECO y COOTRAMAT, y de clasificación de reciclables en Bauru, São Paulo. Los datos fueron recolectados mediante identificación y fueron tratados para obtener el diagnóstico de cada cooperativa, pasando por la caracterización de los materiales comercializados, diagnóstico estructural, así como su funcionamiento (logística). Se pueden implementar algunas propuestas, como la asignación de la gestión operativa de todos los Ecopuntos existentes para gestionar cooperativas que ampliarán este servicio al público y optimizarán la Educación Ambiental; para construir un cobertizo central para almacenar materiales reciclables secos de estas dos cooperativas y potencialmente otros socios para el marketing directo con las industrias de procesamiento después de la clasificación y el prensado. Otras alternativas a considerar son instalar equipos en el almacén, como una extrusora de plástico, para agregar valor a los diferentes tipos de plástico, como la producción de manguera y conductos; dejar de gestionar la recogida selectiva hogar por hogar y permitir gradualmente a COOPECO y COOTRAMAT gestionar la recogida selectiva, ya que esta actitud puede aumentar el número y la calidad de los reciclables secos; y para ampliar las discusiones con el Consejo Municipal para el Desarrollo del Medio Ambiente de las Asociaciones Público-Privadas que involucran el manejo de residuos sólidos en Bauru, con la participación integrada de las cooperativas laborales.

Palabras clave: Gestión de residuos sólidos. Caracterización en cooperativas. Cooperativa de clasificación en seco reciclable.

INTRODUCTION

How to lead with environmental problems is a relatively new concern, although the problems faced today are not contemporary. According to [RAMPAZZO \(2001\)](#), to manage the environment and to keep economic development, represent the challenge of the millennium, known as sustainable development or eco-development. The definition of sustainable development was cited in the [BRUNDTLAND \(1987\)](#) Report of the World Commission on Environment and Development: Our Common Future (WCED) in 1987, p.46: "Sustainable development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs". The current concept of sustainable development was proposed in Earth Summit 2002, as the development, which "improves the quality of human life while living within the carrying capacity of supporting ecosystems". The meaning of this statement is a more specific concept of sustainable development, wherein there exists a concern about to improve human life quality and the usage of Earth natural resources ([MIKHAILOVA, 2004](#)). [SACHS \(1993\)](#) defines sustainability and describe each one of its specificities, organizing them in five groups: a) social sustainability, b) economical sustainability, c) ecological sustainability, d) political sustainability and e) environmental sustainability. SACHS 1993 describes these groups as:

Ecological sustainability – it refers to the growth process physical basis and aims to maintain natural resources stocks incorporated into productive activities. **Environmental sustainability** – it refers to the maintenance of sustaining capacity of ecosystems, which implies in the absorption and recomposition capacities of ecosystems in regards of anthropic aggressions. **Social sustainability** – it refers to the development and aims to improve population quality of life. In the case of countries that face inequalities and social inclusion problems, it implies distributive politics adoption and universal services to issues such as healthcare, housing and social security. **Political sustainability** – it refers to the citizenship construction process to guarantee the full incorporation of individuals into the development process. **Economical sustainability** – it refers to an efficient management of resources in general and is characterized by regular flows of public and private investments. It implies in the evaluation of efficiency by macrosocial processes. ([SACHS, 1993](#))."

The first recyclable waste collectors' cooperatives began in the 1990 decade, due to the increase of urban population and the consequent solid waste generation ([SANTOS et al., 2011](#)). The quantity of these cooperatives grows each year and they become stronger. Nowadays there exists the National Movement of Recyclable Material Collectors ([MNCR 2011](#)), which was created in mid-1999 and aims to enhance the progress of the movement and to bring improvement to the collectors. In addition, since 2002 the Ministry of Labor and Employment recognizes this category as a formal job, a fact that made MNCR stronger.

The National Solid Waste Policy (PNRS), State Law No. 12.305 published on August 2nd, 2010, was proposed in order to promote sustainability ([BRASIL, 2010](#)). The

concern is unanimous in regards of overproduction of consumer goods combined with large residues production, which is driven by consumer culture. To buy and to throw out quickly and successively are very common actions with respect to this culture, whereas there is always something new and better, whose possession could bring the happiness and the welfare promised by propaganda ([KREMER, 2007](#)).

According to Business Commitment for Recycling ([CEMPRE](#)), based on CICLOSOFT 2016, only 18% of cities have a selective collection in 2016 that corresponds to 1055 cities and about 31 million Brazilians have access to selective collection municipal programs. [IBGE \(2017\)](#) indicates that from 5570 cities, 2314 (41,5%) had Municipal Basic Sanitation Plan, comprising a) water supply, b) sanitary sewage, c) drainage and management of urban rainwater and d) urban cleaning services and solid waste management.

As reported by PNRS, Brazilian cities should prioritize Environmental Education, Selective Collection in collaboration with Labor Cooperatives and Reverse Logistics as indispensable tools to have efficient management, which makes the construction of sorting cooperatives and their development an efficient option to promote sustainability. In this sense, this work aims to analyse the current situation of two dried recyclable sorting cooperatives in Bauru, São Paulo State, Brazil, in spite of proposing public policies to improve sustainability in this sector. It is important to clarify that's project materialized through the Recicla UNESP extension project. After that, we contacted the cooperatives to present the project that is when it started.

METHODOLOGY

Data of two cooperatives, COOPECO (Cooperativa Ecologicamente Correta de Materiais Recicláveis de Bauru) and COOTRAMAT (Cooperativa de Trabalhadores com Material Reciclado de Bauru), were weekly collected during six months using a recorder following open and close-ended questions of a semi-structured interview, as it is presented in Chart 1.

Chart 1. Socioeconomic questionnaire carried out with cooperative members.

Open-ended questions	Close-ended questions
Is your household income sufficient?	Gender?
Do you consider working on another activity?	Age group?
How can your work affect society?	Marital status?
What does your family think about your work?	How many children?
Why do you work at the cooperative?	Place of birth?
What do you think about the work that you do?	How long do you work at the cooperative?
	Monthly household income?

The interview performed with 26 cooperative members, in which 14 are COOPECO members and 12 from COOTRAMAT. The questions of the interview based on [ZAMBRA et al., \(2016\)](#) and support to analyse the results obtained here a qualitative exploratory methodology called Case Study ([YIN, 2015](#)).

RESULTS AND DISCUSSION

The role of treatment inside of cooperatives.

Inside of both cooperatives the sense of union and respect between the cooperates it's remarkable. One of role to maintain functioning a cooperative it's a sense of solidarity, tolerance and patience ([OLIVEIRA; LIMA, 2012](#)). Those sentiments are clearly seen in cases, particularly, of elderly people (present and both) with difficulties to keep the high performance. Another point noted, it's the power of dialogue and sense of collective implanted and stimulated by everybody. Personal particularities and histories of lives are known and respected between them and a sense of exclusion is not admitted. That's important to evidence, because the family sentiment transforms their lives, mainly, people with tough history of life. It's not difficult catch a cooperative smile in a face during the work, maybe, these signals are demonstrating of the fraternal spirit.

The role of EMDURB in the selective collection of Bauru

In 1979, the Municipal Agency for Urban and Rural Development of Bauru (EMDURB) created based on Municipal Law No.2166. In that time this enterprise had a different name, Municipal Agency of Urban Transportation of Bauru (EMTURB), and it had administrative, technical and financial autonomy, besides own assets. The current name of this agency was established in 1986 by Municipal Law No. 2637 and with this, EMDURB has assumed new duties ([EMDURB, 2018](#)).

These new responsibilities involve managing the Intercity Terminal of Bauru's Passengers, to perform traffic research and to apply its projects and mortuary service planning, execution and control. There was no subject related to residues collection in the city until June 2nd, 1993 when Law No. 3570 included this issue to the EMDURB concern. In this sense, the aims of EMDURB are:

- a-) to supervise, to manage and to execute municipal traffic politics;
- b-) to supervise, to manage and to execute municipal urban and rural development;
- c-) **to promote, to supervise, to manage and to execute public cleaning, garbage treatment and disposal;**
- d-) to supervise, to manage and to execute the soil usage and occupation politics in the city;
- e-) to supervise, to regulate and to manage mortuary service and municipal graveyard, as well as to inspect private graveyards;
- f-) to supervise, to manage and to execute other public services designated by the Municipality and public and private services designated by other Municipalities or private institutions.

Public Company management nowadays faces serious problems, including jurisdiction typology concerning its roles ([NAVARRO, 2018](#)). With respect to its action plan, i.e. EMDURB roles, this institution needs to improve its management and execution of public cleaning politics.

According to [MORAES \(2018\)](#), Public Company holds 27 lorries, of which six were rented, and in the time of the author's publication, seven of them were broken. All these scrapings promote the inefficiency of urban waste management, with respect to collection,

transportation and disposal of residues. Another problem faced by EMDURB is the healthcare residues management, as reported by [GONÇALVES \(2018\)](#). Treatment and disposal of residues have been classified as fourth party services, once Public Autarchy budget was reduced. To solve this problem a bid created in order to pay a lower price for the same service, although this is not a closed subject. Pursuant to [G1 BAURU MARÍLIA \(2018\)](#), Public Prosecution will investigate this case due to councilor's dissatisfaction in regards to the prices and the possible public funds charging.

EMDURB is responsible to perform the selective collection of organic and dried residues, which promotes benefits to solid waste cooperatives of Bauru, despite the faced problems. Cooperatives work with disposed materials from:

- EMDURB: selective collection and general institutions;
- Voluntarily deliveries;
- Collection in specific addresses (Eco points);
- Residues collecting from big enterprises and centers and other partner companies by own vehicle.

Material is brought to the cooperatives by the city hall on an equal basis since waste is first weighted in a scale of city hall or CEASA, which is a partner institution. EMDURB collects organic and recyclable residues that will be disposed of in the landfill and city hall weights the recyclable and free material.

There is a rotation system based on equality to deliver waste to all cooperatives, in the sense of each one of the institutions can have the same opportunities to collect high-value-added material, probably from noble locations. During the nocturnal period in the whole week, the lorry in activity delivers all residues to the same cooperative in the same specific time. In the following couple of weeks, the lorry delivers waste to other two cooperatives, COOPECO and COOPERBAU (Cooperativas de Recicladores de Resíduos de Bauru) in the same scheme, which guarantees equal distribution among cooperatives.

COOPECO's profile

COOPECO is located at Avenida Santa Beatriz da Silva, in Jardim Ferradura Mirim, in Bauru, São Paulo State. The origin of this institution is a result of a meeting among informal recyclable collectors, which expressed interest in creating a cooperative. COOPECO currently is composed of 22 cooperative members that contracted a security guard and a specialized accountant.

This cooperative holds:

- A shed with 1150 m², covered, with concrete floor and brick walls, wherein there are the following facilities: a workspace, an office, a cafeteria, two bathrooms/locker rooms and a training room;
- Two presses, one scale, one mat and one lorry.

When recyclables arrive at cooperative, the first procedure is the sorting of materials, once the solid waste is can be composed of high-value-added material and other materials, including contaminants. Thereafter, solid waste is disposed on a mat wherein it sorted manually, with respect to its composition. In addition, this process must repeated for some materials in order to guarantee a better sorting of recyclables.

Sorted material is stored in bags to ease recyclable packing and usage. These bags manually transported to the press, producing the final product and in the final will be available for the market. All these steps performed with efficiency and synchrony. Unsuitable material (non-recyclable or contaminated) is discharged in a landfill that belongs to the city hall, which pays ESTRE AMBIENTAL, an enterprise located in the city of Piratininga, to perform the process. The cost of landing unsuitable waste in the landfill ranges between R\$ 110,00 and R\$ 115,00 per ton disposed of. The city of Bauru generates about 300 thousand tonnes of household waste each day, which implies in the great amount of money spent on the landing process.

Overall, managers of COOPECO's requirements are:

A-) new shed donation or shed's structure reform. Cooperative cannot build a pit to ease the sorting in a continuous way due to the old structure of the current shed, which was donated to this institution. The problem is that the lorry discharges collected material anywhere on the slatted floor, which can delay the sorting process.

B-) financial supply in order to COOPECO affords a new and modern press, since the current one consumes a high amount of energy.

C-) more communication within cooperative members. Some lorries were bought from SEMMA in pursuant to perform selective collection, although there was not a survey applied to the cooperative members before the acquisition of the vehicles. Due to this, some materials, as glass, are compacted in a way which can preclude the sorting of other materials, therefore it can jeopardize all the involved market chain.

D-) equipment structure since there are buyers in other cities that can pay more than Bauru buyers can for the material. One problem faced in regards to this is the infeasibility of transportation due to poor conditions of vehicles as well as the number of lorries.

In Figure 1, shows that the major part of COOPECO works is male and 43% of them are in the group age of 18-29 years old. Most of the cooperative members are single and 64% of them have children. In consonance with monthly household income, which is R\$ 967,85, cooperative members considered it an insufficient amount and 64% of the workers expressed the desire to have a better paycheck and 42% stated that they are in the cooperative due to necessity or lack of opportunity.

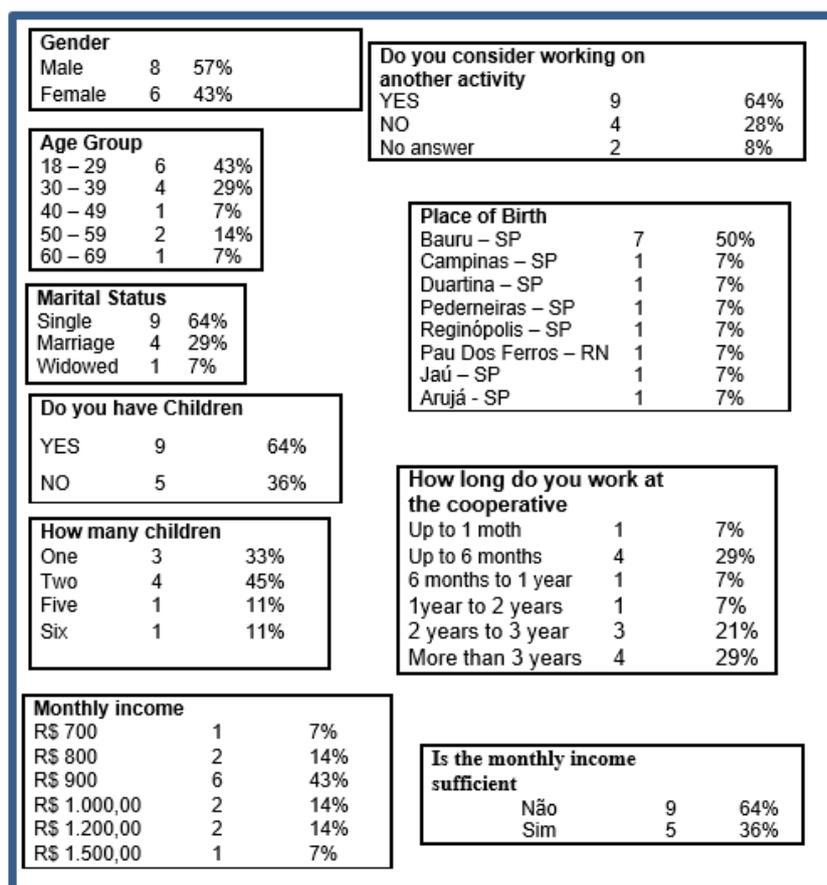


Figure 1. Answers to the socioeconomic questionnaire carried out with COOPECO members.

Although some cooperative members stated that they do not have other opportunities or they need to work there, 50% of them is a member for two or more years, which emphasizes the social role of cooperatives in offer job opportunities. According to the descriptive analysis, shown in Figure 2, 50% of cooperative members see their work as a good and decent activity and 35% of the members understand that their job plays a fundamental role to the society and environment.

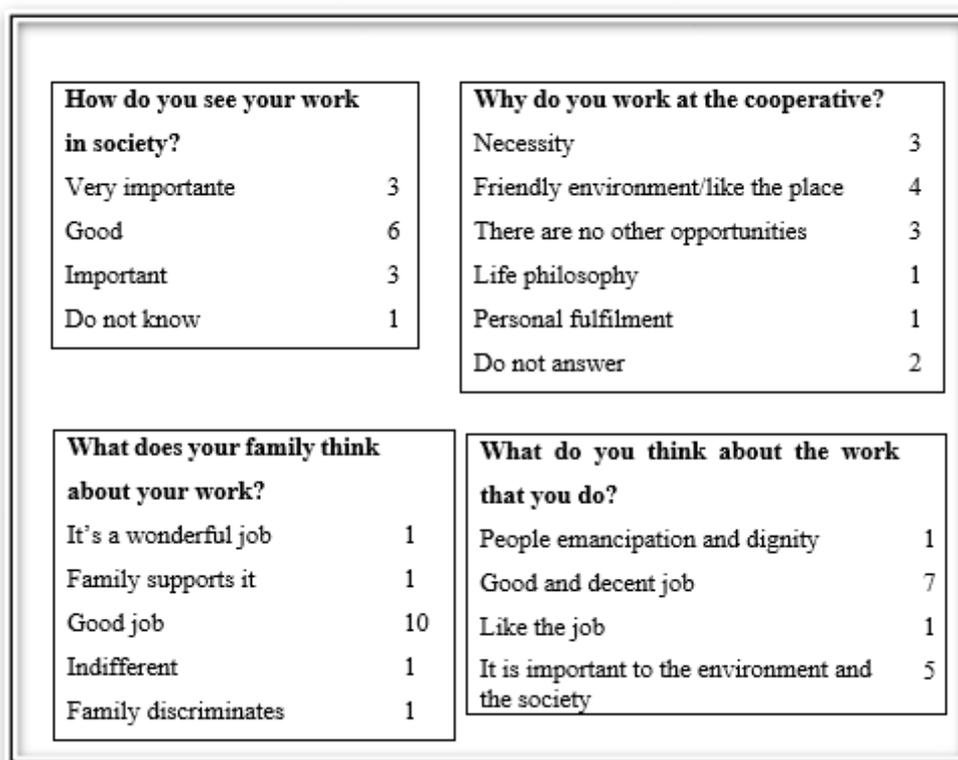


Figure 2. Distribution of cooperative members in regards to their vision about their role in the society and the environment.

It is important to highlight here that during the interview the members seemed interested in social and environmental questions, which strengthens the cooperative role in the emancipation of people in order to guarantee dignity, based on and determined by life philosophy.

COOTRAMAT's profile

COOTRAMAT created in 1992 as a collector's association and it is currently located at Rua Travessa James Russel, in Jardim Redentor, in Bauru, São Paulo State. In 2006, COOTRAMAT formally became a dried solid waste recycling cooperative.

This cooperative holds:

- a mat and a forklift;
- three presses, wherein two are from city hall donation.

This cooperative currently employs 12 members; nevertheless, in another time 30 people ran it. Assignment of tasks depends on the sorting logistics and the volume of collected material; thereby cooperative members do not have specific functions in the center. When EMDURB lorry arrives, cooperative members distributed themselves in the following activities: cleaning the discharging area, sorting high-value-added material, manually disposing of material in the mat, packing the recyclable material in bags and laying the sorted material in the press.

Due to demand, the nine women designated to do sorting, whilst the three men are responsible for material pressing. Nowadays these 12 cooperative members collected the material processed; therefore, it is not feasible to COTRAMAT to hire more people.

COOTRAMAT faces some issues, such as:

A-) Lack of structure, mainly on rainy days, due to the shed being open and the non-existence of a drainage system. A private institution would build a drainage system to COOTRAMAT; however, since the cooperative represents a municipal organization, even without the financial support of city hall, it is not legally possible to change the physical structure of the shed.

B-) Lack of security. For example, in March on the 16th of 2018, someone stole the mat machine, impeding the recyclable process.

C-) Lack of financial support. The Department of Social Welfare used to deliver basic-needs grocery packages to the cooperatives before the new management. Municipal Public Authority supports cooperatives only by paying bills, as power and water bills, and providing collected material.

D-) Lack of material. For example, the cooperative holds three presses, although only one is necessary now, due to the lack of material to process.

Regarding the cooperative member's gender, in COOTRAMAT 83% of the working class are women, differently of COOPECO, in which the majority is male. Equilibrium observed when analyzing age groups and the most representative groups are 18-29 and 50-59 years old, which each one is equivalent to 25% of cooperative members. Marital status here concentrates 75% in single people and all interviewed has children. Monthly household income varies between R\$ 600 and R\$ 800. Nevertheless, due to an agreement with Banco do Brazil, cooperative assures R\$ 1100,00 as monthly household income per cooperative member.

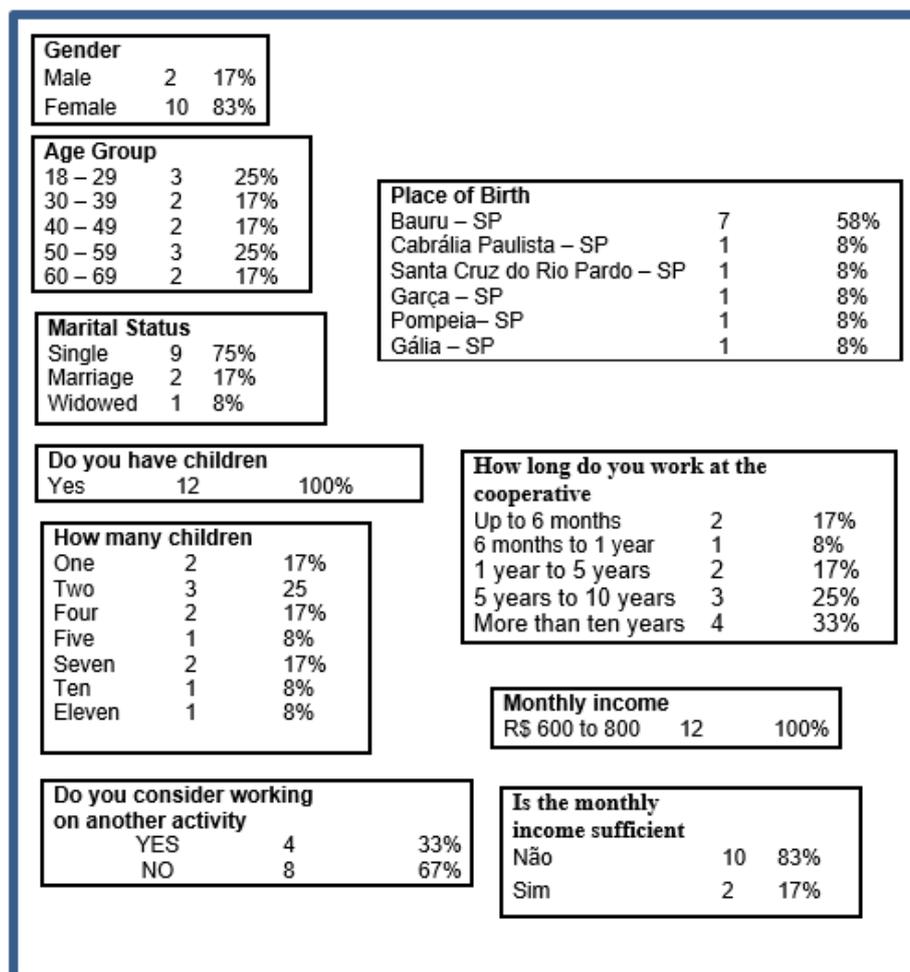


Figure 3. Answers to the socioeconomic questionnaire carried out with COOTRAMAT members.

With respect to the place of birth, 58% of cooperative members were born in Bauru. Moreover, 58% of workers play roles in the cooperative for at least five years and, 33% of this amount work there for at least 10 years. There are two collaborators in COOTRAMAT that execute their activities there for 20 years, even after having other jobs, they decided to come back to the cooperative.

Analyzing the satisfaction of the members regarding the duty, 33% intend to have a job that pays better, although 83% of collaborators stated that the monthly household income is not sufficient. This contradiction explained by the necessity of the members in having a job (58%). In addition, 42% of collaborators considered their work good and decent, whilst 58% stated that they play an important social and environmental role, as shown in Figure 4. In this sense, these statements highlight the relevance of having a recyclable waste cooperative in the city.

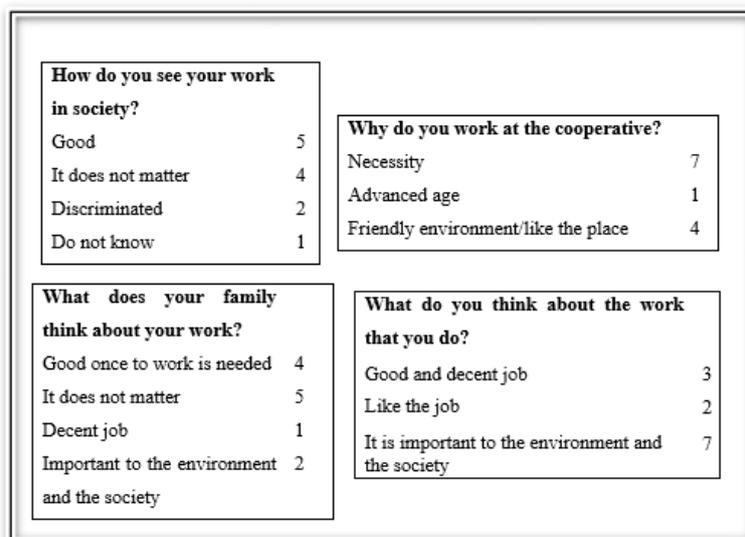


Figure 4. Distribution of cooperative members regarding their vision about their role in the society and the environment.

Cost of recyclable materials from COOPECO and COOTRAMAT

Besides the cooperative profiles, another aspect of the survey was to analyse which products are recyclable and how much they cost after the recycling process. In Chart 2, described prices of several materials of COOPECO and COOTRAMAT.

Chart 2. Cost of materials of COOPECO and COOTRAMAT.

Materials of COOPECO (R\$)	Materials of COOTRAMAT (R\$)
Cardboard - R\$ 0,26	Cardboard - R\$ 0,44
White/green PETE bottle - R\$ 1,45 each	Paper card - R\$ 0,25
White PP - R\$ 0,80	Tetra Pak - R\$ 0,17
Colored PP - R\$ 0,65	Newspaper - R\$ 0,45
Mixed PP - R\$ 0,65	Magazine - R\$ 0,30
White HDPE - R\$ 1,15	Mixed paper - R\$ 0,35
Colored HDPE - R\$ 1,05	White paper - R\$ 0,38
Mixed HDPE - R\$ 1,10 each	PETE - R\$ 1,85
White cardstock - R\$ 0,08	HDPE - R\$ 1,30
Brown cardstock - R\$ 0,08	Shefa - R\$ - 0,10
Milk tetra pack - R\$ 0,15	PP - R\$ 0,80
Aluminum/aluminum can - R\$ 2,70	PETE oil bottle - R\$ 0,70
White plastic - R\$ 0,90	Mixed plastic shavings - R\$ 0,35
Colored plastic - R\$ 0,60	Styrofoam - R\$ 0,50
Mixed plastic - R\$ 0,60	Shattered glass - R\$ 0,05
Newspaper - R\$ 0,25	Bagged glass - R\$ 0,10
Magazine - R\$ 0,08	Aluminum - R\$ 3,50
PS - R\$ 0,20 each	Scrap-iron - R\$ 0,30
White paper - R\$ 0,24	RX - R\$ 2,00
Graph paper - R\$ 0,15	
Glass - R\$ 0,10	
Shattered glass - R\$ 0,04	
PETE oil bottle - R\$ 0,60	
PVC - R\$ 0,50	
Scraps - R\$ 0,26	

In COOPECO, 26 different kinds of material sorted in August 2018, which yield 59833 kg of pressed material for marketing, and in September, 60700 kg of pressed material commercialized. In COOTRAMAT, 40 tonnes of dried recyclables sorted in September 2018, and 58 tonnes in the next month, in which all solid waste here is composed by 19 different kinds of material, with specific costs. Both institutions sort, clean and package material in bags in order to commercialize. Nevertheless, COOPECO sells HDPE and white/green PETE individually, according to previous agreements with the buyer.

Recyclable materials prices listed by a CEMPRE survey, non-profit institution whose mission is to raise citizen awareness about the importance of reducing, reusing and recycling waste. To achieve its goal, CEMPRE promotes surveys and seminars, publishes its works and holds data sets, such as the dissemination of recyclable materials costs in Chart 2.

Table 1. Recyclable materials prices per month.

RECYCLABLE MATERIALS PRICES IN SÃO PAULO CITY (2017)									
Month	Cardboard	White paper	Steel cans	Colourless glass	Coloured glass	Rigid plastic	PETE	Plastic wrap	Long-life packages
Jan/Fev	0,46 PC	0,46 PC	0,55C	4,75P	0,18C	-	1,75P	1,90P	0,60P
Mar/Apr	0,43 PC	0,55 PC	0,30C	4,10PC	0,16	0,90C	1,90PC	1,30	0,36P
May/Jun	0,42 PC	0,45 PC	0,90C	4,00PC	0,12	1,50C	1,60PC	0,80	0,30P
Jul/Aug	0,47 PC	0,45PC	0,30C	3,80PC	0,14	1,62C	2,00PC	1,40	0,35P

Source: CEMPRE (2018). P= pressed, C= clean *price per kg.

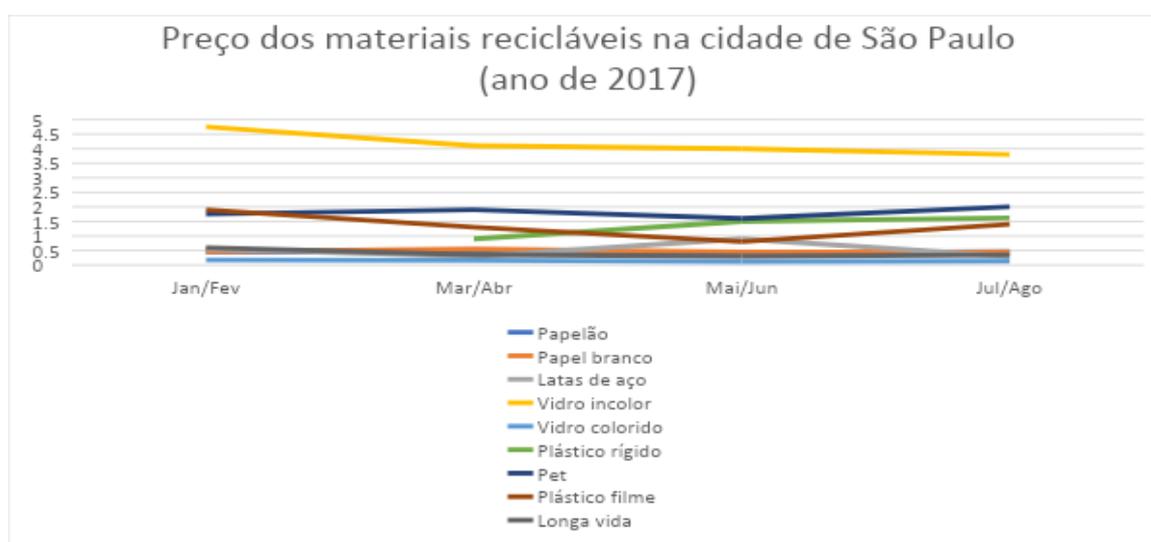


Figure 5. Recyclable material prices per month.

Source. CEMPRE (2018).

As it can be seen in Figure 5, among all price variations in eight months, colorless glass has the highest price and colored glass the cheapest, during the whole period. Another material varies their prices from R\$ 0,30 to R\$ 2,00.

Table 2. Cooperative products supplied by CEMPRE with respect to their prices in Bauru.

Product	COOPECO	COOTRAMAT
Cardboard	R\$ 0,45	R\$ 0,44
White cardboard	R\$ 0,50	R\$ 0,25
Steel cans	R\$ 0,15	R\$ 2,00
Colorless glass	-	-
Colored glass	-	-
Rigid plastic	R\$ 1,20	R\$ 1,05
PETE	R\$ 1,60	R\$ 1,85
Plastic wrap	R\$ 1,10	R\$ 1,30
Long-life packages	R\$ 0,15	R\$ 0,17

Several materials of cooperatives in Bauru has a similar price when compared with CEMPRE supplies, for example, cardboard and PETE bottles. In another hand, resold material in bigger cities, such as São Paulo city, costs slightly more than that one resold in country towns or small cities. Observed the increase price, for example, in long-life packages and colorless glass values. Usually, colorless glass is more expensive than the colored ones, however, according to the customer preference, this material can commercialized in a mixed way.

In addition, to sort glass demands more labor, hence more time is required to have financial responses. In COOTRAMAT, glass is sold in bags or in shattered form and there is a politics in which high-value-added material is withdrawn, such as carboys, olives and mayo bottles, once a small amount is required to be sold in order to obtain a better payment. According to CEMPRE data, rigid plastic can be classified as PP or HDPE. In order to standardize costs per material, rigid plastic mean price is R\$ 1,20 in COOPECO, once PP costs R\$ 0,80; white HDPE, R\$ 1,60; colored HDPE, R\$ 1,20; and R\$ 1,05 in COOTRAMAT, due to the costs of PP and HDPE, R\$ 0,80 and R\$ 1,30, respectively.

Recyclable material price varies in consonance with supply and demand, as well as seasonality. The higher the supply of some material, the lower is the demand of it. In another hand, the lower the price of a material, the higher is the demand; therefore, the material is high-valued. As can be seen in Table 2, from November to February there is a decline in selling prices, due to the high demand, nevertheless, prices normally increase in the course of the year.

CONCLUSIONS

As foreseen in the national solid waste of plan the cooperatives contributing in important aspects to the county. One of them relates an economic instrument where brings ways to dialogue both (Bauru's cooperatives and PNRS) an implantation of physical structure and acquisition of equipment's. Beside this, the shared responsibility about the recyclable and the whole productive chain materials it's another relevant point and must be more explored. In this case, actions and programs to promote participation of cooperatives in selective collector or public services urban clean can be a suggestion as hiring people, mainly, inside of cooperatives.

Obtained results showed that Labor Cooperatives plays environmental, social and economic important roles, once they execute a fundamental function in household residues management and undoubtedly more appreciated. In Bauru city, even though

Selective Collection occurs for at least 20 years, some proposals adopted in pursuance of guaranteeing improvement to cooperatives, such as:

- To cease operational management of all Eco points made by city hall and transfer the management to the Cooperatives, to allow the extension of customers attention time and the optimization of Environmental Education.
- To build a central shed to storage dried recyclables after sorting and pressing from both cooperatives, as well as from potential partners in order to promote a simpler commercialization with processing industries. In the shed, several types of equipment must installed to add value to recyclable materials, for example, a plastic extruder can used to make conduits and hoses.
- To cease the management of home-by-home selective collection and gradually to allow COOPECO and COOTRAMAT to manage selective collection, since this attitude can increase the number and quality of dried recyclables, therefore it affects directly the financial system of the designated municipal authority, EMDURB.
- To expand discussions with the Municipal Council for the Development of the Environment (CONDEMA) of Public-Private Partnerships involving the management of solid residues in Bauru, with integrated participation of Labor Cooperatives.

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