

Environmental Policy of Solid Urban Waste and the Socio-Environmental Impacts in Baturité, Ceará, Brazil

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Received: 20 Jul 2022,

Received in revised form: 05 Aug 2022,

Accepted: 10 Aug 2022,

Available online: 15 Aug 2022

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Keywords— Urban Solid Waste. Environmental Policy. Garbage Dump. Baturité-CE.

Abstract— The research had as its primary objective to understand, from the socio-environmental perspective, the limits, and possibilities of the dynamics of solid urban waste treatment in the municipality. Methodologically, this research study is an exploratory case study, of a basic nature with a qualitative approach. For data collection the techniques of direct observation and non-directive interview were applied to collectors/ dwellers of the municipal dump of Baturité-CE. As for the analysis techniques, content analysis and socio-historical contextual narrative discourse were used. As conclusive results, the study found that the collectors / residents live in a situation of socio-economic and environmental vulnerability, without having a collective organization to support them, including the absence of municipal government in relation to support these professional collectors of urban solid waste in general and in the locus of the research, specifically.

I. INTRODUCTION

Currently consumerism has become a constant practice in capitalist society. The way of life based on the growing propensity to consume, mostly superfluous, due to its symbolic meaning to achieve a need for pleasure, are often induced by a mass communication: media system means that has characteristics of reaching at the same time many receivers, starting from a single sender disseminating information to the high degree of consumption.

Following this reasoning, we observe that the increase in population leads to a large mass of people consuming in high quantities, products with no durability potential accommodated in long life containers. The "leftovers" from this unbridled consumption accumulate without consumers being concerned about their destination, causing an excessive generation of Urban Solid Waste - USW's. In the municipalities, this problem is crystal clear, since. "Waste generation is directly proportional to the total income of the municipality, i.e., the larger the city and the higher the income, the more waste will be produced by them" [1].

However, we can affirm that, whether in large or small cities, the increase in the generation of SUW's, as well as the absence of specific places, separated from the population centers, that present prerequisites for the disposal of these residues, avoiding and/or reducing the great contamination of soils, water resources, and air, has become a problem of great administrative repercussion.

In the municipality of Baturité the presence of open-air garbage is constant. To the people, the garbage dump is a place that many of us would never pass by, not

even close, because it is a place where we can't go anywhere else - smelly and horrendous. There are miserable people, poor wretches, underprivileged people, and other adjectives that people use when referring to those who deal with garbage. These stereotypes are based on prejudice and have perpetuated errors of judgment for many years, which only contribute to ineffective communication and personal relationships.

Based on this premise, many municipalities in Brazil, such as Baturité, in the state of Ceará, present situations of negative socio-environmental impacts, associated with anthropological actions related to USW's, for not having adequate management and management for their waste. Therefore, it is essential to alert both the municipal government and the population of this municipality to reflect on our attitudes towards the natural environment and the "garbage" that is produced.

The problems arising from the lack of proper attention to the USW's, are easily attributed to the demographic growth, the lack of awareness and environmental education of the population as well as visitors to the Maciço de Baturité; to the detriment of the conservation of the natural environment, have made these factors aggravating this problem.

It is necessary to show society the garbage scenario, where those people are inserted, the subhuman working conditions, housing, health, in the sense of public power support, and their perspectives for improvement of this environment. What do these waste pickers think about their working conditions? Why don't they look for another way to survive without depending on the absurd scenario

that those ramps are?

Since this is a theme related to our reality, the impacts that these dumps cause are the result of an absent and poorly managed public policy, resulting in a vulnerable situation for the collectors' way of life in that region.

In turn, both the government and the population, in general, need to assume their responsibilities regarding the minimization of this problem, from the public instance, yes, with programs of Environmental Education - EE consequent and concrete actions of management and proper waste management. Thus, such research was characterized in the search to understand and deepen the study on RSU's, sought the investigation beyond the consultations of documents from the competent bodies in the three spheres: Federal, State and Municipal - ABNT 10004/2004 Brazilian Standard; PNRS; PERS; PNEA; PDR_{Maciço}; PPA_{Maciço}; Organic Law, PA the City of Baturité-Ceará.

II. THEORETICAL AND METHODOLOGICAL PROCEDURES

At the current juncture, Baturité has not yet realized what public policy dictates. And the elaboration of the PRRS of the Massif has not been properly accomplished. It should be noted that Baturité receives SUW's from neighboring municipalities, deposited in the open-air dump.

The environmental actions officially proposed by the municipality - see Municipal Organic Law; Law 160/2001; Law 1.221/2003; Law 1.615/2013, and PDR, 2004 - are not known by the population, therefore, without the necessary resonance in society. In fact, the proposals of the municipal government in "practice" still do not mean "public policy," since the "public" is not aware of them.

Thus, it is expected that the public authorities - schools - civil associations, and society in general, invest in environmental practices that can concretely minimize the impacts resulting from the lack of socio-environmental awareness of the population, as stipulated in law 1.221/2003.

The Ágape Institute counts on partnerships with small companies and the active participation of young people from schools and the community in general, besides building a bridge with Unilab. The educational action of the institution focuses on the development of social work in the environmental area through lectures, courses and workshops involving the theme, technical guidance for the realization of EE, especially in the APA Baturité; activities that, primarily, would be the responsibility of the public authorities.

There is also in the municipality the AACEMB - Associação dos Agentes de Endemias do Maciço de

Baturité, which is a private association, founded in 2012, which develops, for example, the sustainable project of recycling materials, turning them into art. The project works with reusing tires, turning them into trash cans or plant pots; pet bottles that become vases... among others. All the products are displayed in public spaces, in the city squares, to be sold as income for the project's logistics, and to count on several partners: merchants and people from the community.

These examples demonstrate the need to rethink what has been done so far and what needs to be changed for the transformations necessary to maintain and improve the natural environment to happen in practice.

According to [2] the waste collectors are "people condemned to live at the margins of the capitalist accumulation system", being seen as non-citizens, unnecessary to the system: they do not produce, do not consume, and are still "stigmatized by the fact that the marginality and precariousness" of their living conditions are interpreted as an individual will not to work, and not as an imposition of the increasingly selective and exclusionary productive system.

Thus, these professionals are marked by precariousness, prejudice, and devaluation.

For [3] they are "careless-looking" people who, literally, live inside the garbage.

These are provocative views, for exposing in a public way, poverty. Misery. Socially deprived subjects, placed at the margin. Since ancient times they have been surviving on the leftovers of those who consume and discard what they consider useless, being called garbage (solid waste), in contemporary times. These stereotypes are based on prejudices that, for many years, have perpetuated errors of judgment that only contribute to ineffective communication and social-political relations.

In this context, they find themselves in the garbage dump, where they perform their labor as an act of resistance to the exclusion and insecurity caused by the "transformations of the globalized but unfair world", forcing them to live in a situation of extreme vulnerability. They are people who have been unemployed for a long time, come from the agricultural and cattle raising sectors, former prisoners, and/or come from places of extreme poverty, and are on the verge of indigence. As a rule, they have little or no schooling, or no professional training.

[3], further states that:

The collectors of the Dump recognize that their working conditions are precarious, considering the lack of

personal protective equipment, the lack of a suitable place to work, such as covered sheds, which makes it difficult to work in the afternoon, due to sun exposure. At night, there is no lighting, and, in periods of rain, they end up working inside humidity.

For [4] the work performed by the collectors is considered precarious, due to inadequate conditions, with a high degree of danger and unhealthiness, without social recognition, with risks that are often irreversible to health, and with a total absence of labor guarantees.

[5] affirms that the Industrial Revolution, in the XVIII century, allowed the development of several industries, giving rise to new material artifacts and increasing the generation of several types of waste,

[...] with emphasis on industrial or synthetic products; products bought, used, and discarded; demanding increasing amounts of raw materials, subtracted from nature; many of them non-renewable; and the large increase in their chemical compositions, which are now very diverse, making their natural degradation and reabsorption difficult. Many of them have a short time of use, as is the case of batteries, electro-electronic products, and the most varied packaging, notably, polymeric packaging, such as plastic and plastic-cellulose.

This confirms that since the Industrial Revolution human actions in relation to consumption have been unrestrained, increasing, uncontrollably, the production of waste with final disposal in an inadequate way where everything ends up in the dump.

For the author, all human activities - anthropic - produce residues that induce enormous difficulties at the time of their treatment and final disposal. Therefore, there is a major problem at hand: municipal governments depend on the resources involved, as high investments are required, to remunerate people; training and qualification, as well as for the purchase of equipment and the cost of the RS's management system.

However, it is the municipality that generates the waste that must take responsibility for the production and final disposal of the garbage. The photographic records and the interviews with the garbage collectors show that the municipality must fulfill its role according to what is stated in the legislation, involving the whole society to do its part in a shared manner.

[6] explains that such a process enables a uniform and harmonious development among all stakeholders, to achieve the proposed objectives, appropriate to the needs and characteristics of each community. For this to occur, it is necessary dedication to think about the planning model and establish strategies to execute and program controls in the action that will be developed.

Another fact, facing the socio-environmental issue, is the continuous burning of garbage, preventing the reuse of these materials, because their sale as waste is compromised. The materials cited by the collectors as good and considered as profitable are plastic bottles, rubber, iron, and other materials such as - "the melissa", aluminum and dry plastic.

After a rough, urgent, competitive selection with their "peers"; the collectors in their "homes" make a "finer" selection of what really has value and will to provide them with a livelihood. It is necessary to emphasize that all this work is also developed among various materials of inflammable compositions, with constant burning of garbage, making it very difficult to handle the selection of materials that make it possible to generate income. Some waste pickers don't know or don't want to understand these processes that can harm their health. They are subjected to intense heat, both from exposure to the sun and the heat that is expelled from the ground because of the burning and decomposition of the garbage.

During the interviews at the dump, we witnessed waste pickers collecting waste "for recycling" in the center of the dump without any working conditions and without any safety. This happens because the waste arrives mixed and they must get there "on the ramp" - as they say - practically diving into the garbage, to pick up everything that seems to fit them. And, after a tiring day, they think about what might come the next day, so that they can start again another process of waste separation. The pickers are not concerned about whether they are sharing the scenery with the garbage, their concern lies in their ability to collect as much garbage as can be stacked.

We observe many discarded tires, which becomes a serious environmental problem. Even though they are classified as inert, they are undesirable residues from the environmental point of view. When discarded in rivers and lakes, they can contribute to silting and flooding. When they

are burned, they produce extremely toxic emissions, due to the presence of substances that contain dioxins and furans.

When disposed of inappropriately, for example, in landfills, they allow water to accumulate inside and can contribute to the proliferation of mosquitoes that transmit dengue and cholera. The glass rejects are quite visible on the ramp, and that their decomposition takes a long time to deteriorate. It is known that the composition of glass is resistant enough to understand that it is not reabsorbed by nature. The lifetime of this material is 4,000 years to disintegrate by erosion and/or action of chemical agents [7].

In the methodological scope, this work aims to address, qualitatively, a case study. It is characterized by understanding from the socio-environmental perspective, the limits, and possibilities of the dynamics of treatment of solid urban waste in the city of Baturité- Ceará. To delineate the way of life of the collectors/landfill dwellers, and to observe how the issue of environmental education of the municipality of Baturité- Ceará is today.

The methodological strategies employed for the development of this research follow the scientific method proper to the empirical-formal sciences. The method is understood as scientific the strategic paths used to investigate a research object in a systematic way through theory, methodology and peculiar technical procedures, adopted and accepted by the academic-scientific community [8]; [9].

As for the objectives, this study is of exploratory nature, because, in addition to exploring a concrete and verified reality, exploring specific facts, enabling the familiarization of the theme from the specific and scientifically studied contents. Exploratory research seeks to provide "greater familiarity with the problem, with a view to making it more explicit" [10]; [8].

It is worth mentioning that the field diary was very useful for noting details and curiosities during the research. A field diary is a complex instrument that allows the detailing of information, observations and reflections suggested during the research or moment observed [11].

Regarding the technical procedure adopted, the case study, we inform that the case chosen, among many others, were the socio-environmental impacts from solid urban waste from the dump of the city of Baturité, State of Ceará. According to [12] this procedure corresponds to an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between the phenomenon and the context are not clearly defined.

Thus, the case study was structured with the use of individual interviews, guided by a semi-structured script

and direct observation, as techniques for collecting data and information. According to [13], in the individual interview, the interviewer structures a script that will serve as a guide so that he can get the answer that reflects the position of the interviewee and that helps him to answer the investigated problem.

Therefore, we investigated the destination of the garbage generated and collected in the municipality, to find out where and how this waste is disposed of by the competent body. A survey of the environmental agencies and their attributions was also carried out.

These techniques were important because the data analysis and treatment were supported in a qualitative way and presented through discursive language. About the treatment, the techniques of content analysis were applied, in which it was carried out comparative reading of the quotes from the research subjects and contextualized sociohistorical discourse analysis. The results obtained with the interview were evaluated in parallel to the notes made in the field diary instrument during the investigative process.

The field research was carried out at the dump of Baturité located near the margins of the CE-021 that connects the CE-060 to the other municipalities of the Massif. It is approximately 3 km away from the municipal center.

III. RESULTS AND DISCUSSION

The results observed during the visits to the dump were transcribed and analyzed according to the mentioned approach and correlated to the characterization of the socio-environmental impacts caused by the garbage in the interviewees' daily lives, as well as in the surrounding environment.

Especially, with the waste pickers, we analyzed the occupational risks, their perspectives for improvement, among others, focusing on the discourse of those subjects.

The first impact that distressed us was the sequence of several trash chutes and a lot of smoke all the time, making it impossible to be present at the site.

The collectors are forced to live with this pollution, with health risks: respiratory, lung, and, mainly, eye problems due to the gases that are eliminated by burning the garbage.

When we entered the dump, there were scavengers in the middle of the ramps collecting waste, i.e., their livelihood, all without PPE. We took photographs with the permission of the waste pickers, and we registered clippings of the place that caught our attention to assess the social and environmental context of those involved in the activity of

waste collection. In addition, we conducted interviews that took place at various stages and during visits to the research site.

Initially, the research sought to know the profile of the collectors and through it, we obtained information from the subjects from their free speech. Thus, it was delineated from: sex, age, place of birth, education, marital status, place of residence, type and conditions of housing, how long they have been performing this professional activity, type of recyclable material, the most profitable and individual income, where they collect this material, receive any benefit, have ever acquired any disease, suffered any kind of verbal or physical violence, ever suffered prejudice, have children and if they are involved in the collection activities, if they are associated with any cooperative, if they have support from public authorities or the community.

For the socioeconomic characterization, the first point detected is that 70% of the interviewees were male and 30% were female (Figure 1-A). All inhabiting shacks in recyclables, especially flammable ones, in the dump itself. Regarding the age of the waste pickers interviewed, we observed that a percentage of 40% of the waste pickers are between 28 and 38 years old (Figure 1-B).

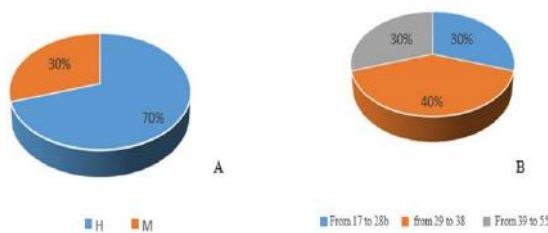


Fig. 1: A - n° of interviewees per gender. B - age range of the waste pickers at the dump.

Source: Elaborated from the interviews with the catadores

As for the pickers' place of birth, it was found that 74% are children of Baturité, and most were residents of the Candeia district - a rural area of the municipality - while 26% were from Quixadá (Figure 2-A). Regarding the collectors' schooling, it was found that 70% can neither read nor write, while 20% only know the name, but cannot read, and 10% have incomplete elementary school education (Figure 2-B).

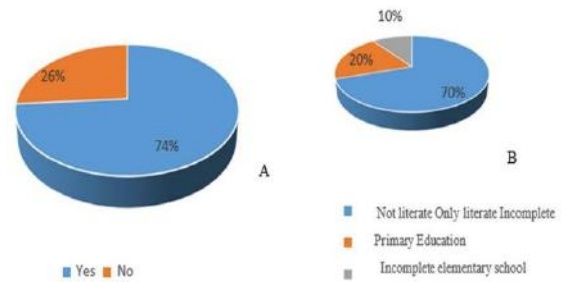


Fig. 2: A - Place of birth. B - Education of the collectors.

Source: Elaborated from the interviews with the catadores

As far as the place where the interviewees live is concerned, they sleep at their own workplace, that is, at the garbage dump - in a shack built out of tin foil collected on site (Figure 3).



Fig. 3: Home of the garbage collectors.

Source: Personal archive.

According to the reports, there are two residents who live in Candeia and return to their homes on weekends or on days that are pre-established by them. According to them, "the house there" is made of mud, and they all justify staying directly in the shack "because nobody invades and takes the space". They don't have bathrooms for their special needs, no running water - they buy water - and no energy. Inside their houses the temperature is very hot, because the walls are made of tin, the partitions are made of cloth and most of them sleep on the floor on a mattress.

Figure 4 demonstrates how long they have been practicing the collection activity at the dump. With 80% stating that they work with waste picking/inhabit the site in a range of ten to seventeen years; the remaining 20% claim to have been in the waste picking activity for five to nine years and reported that they "accompanied their mother" - who has been there the longest, since childhood. The pickers who have lived the longest, say that they have been picking

up trash since the first dumpsite that appeared in the municipality and that when they rented another piece of land, they came in search of their livelihood. "At first it was difficult because it was far from home," but with sometime later they began to make their shacks to store the recycled materials and then "it was staying" until it became a fixed dwelling.

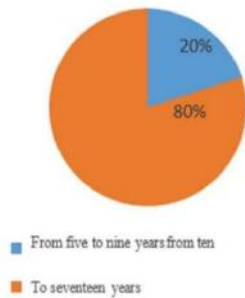


Fig. 4: Length of time working as a garbage collector.

Source: Elaborated from the interviews with the catadores.

As for the materials collected for sale, most "prefer" aluminum, melissa (characterized by various types of rubber, e.g., slippers), thick plastic (characterized by packaging, mainly of hygiene and cleaning products, e.g., shampoo bottles), PET (characterized by soda and oil packaging), iron and copper scrap, and glass. There is a predilection for aluminum because of the price paid, but this "little has come locally", therefore, the collection depends on what is available now, only the cardboard is not collected because of the organic mixture that ends up damaging it for recycling or burning.

Since everyone works, individually - "here the couple is uno!" - some claim to get, monthly, "half of a minimum wage." Others even "exceed this", earning about R\$ 500.00 per month. The value obtained from the sale of the materials is insufficient to support their families. The waste pickers have no fixed buyer, they sell their material according to the arrival of different buyers and for "unfair prices".

It was noticed that the average income they claim to take from the dump, depends on the pace and what "garbage" arrives, the more garbage, the higher the income. A few believe that it is enough, because they have assistance from the family scholarship, but most do not receive any benefit. Waste collection is done at their own workplace, at the garbage dump. And they do the separation-recycling in the shack where they live.

When asked about health problems due to their frequent contact with garbage, they said that "no serious

illnesses", but most said they suffer from headaches, fevers, stomach aches, coughs, and flu, which are constant, "due to exposure to the sun". Only one resident said he had an operation for an ulcer.

When asked if they have suffered verbal or physical violence because of their conditions, the majority said yes. The total of the interviewees claim that they suffer both verbal and physical violence, because of the "disputes", for example, about the dumpsters of the

garbage. Currently, they have had to organize themselves so as not to have more fights, separated by cities, about the origin of the garbage. For this, some of the interviewees reported that there was an agreement among them, in the municipal forum, to divide the collection days for each picker/ resident.

As for suffering prejudice, 90% of the interviewees consider that when they say they "work at the dump," many "people" suggest another job, but at the same time, they answer "I think it's better to be at the dump than somewhere else. The other 10%, say that yes, they have suffered when they say that they work at the "ramp" now of some purchase in certain stores, in the "credit issue" (Figure 5). When asked if they had children and if they are involved in the collection activities, most said that they do not involve children in the collection, but sometimes some from the neighborhoods show up to "make mischief".

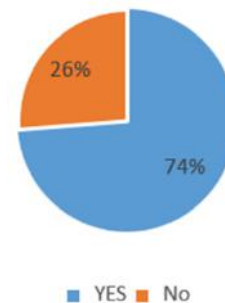


Fig. 5: Prejudice suffered for simply being known as a waste picker

Source: Elaborated from the interviews with the catadores

The interviewees affirmed that there is no cooperative. Some believe that individual work becomes more profitable; if they had a "cooperative, it wouldn't work because some can rely on each other's work" and prefer to go it alone. When asked how important the selective collection in a cooperative was, most answered that it would be "a delay of life".

The prospects of these collectors are minimal because they claim that at the dump "nothing ever changes", they always say that they are used to this situation. About

the support offered by the public authorities or the community to the class of collectors, they say that they are forgotten, that there is a lack of support and that they have never received visits from doctors, health agents, and much less from Social Action.

It is worth noting that the process of urban occupation and the use of rudimentary techniques by agriculture have contributed to the degradation of natural resources. This is contributing to the reduction of the planting areas, resulting in a decrease in the productivity of the agricultural sector, which is one of the pillars of the region's economy, occupying a large part of the active labor force [14]; [15].

Baturité, through the municipal law No. 1.615/2013, which provides for the Multi-Year Plan - PPA of the municipality for the period 2014-2017, with strategic basis focused on the improvement and quality of life of the population, provided for 2017 the end of the open dump. And guided: Improve the conditions of infrastructure, urban planning, basic sanitation, essential services, providing residents with the appropriate habitability and displacements and urban development in a rational and balanced manner. The plan intended to promote the practice of environmental protection and preservation [16].

The municipal law n° 1.160/2001 - Environmental Policy of the Municipality of Baturité - propounds, for the exercise of its constitutional competence and in the terms of the Organic Law, that it will be responsible for the creation of means, instruments, and mechanisms that ensure effectiveness in the implementation and control of policies, programs, and projects related to the environment (Article 3°):

- XI - To ensure the environmental sanitation in Baturité, in a broad way, covering the aspects of water supply, sanitary sewage, collection, treatment and final disposal of solid residues, drainage, sanitary education, incineration of hospital residues, among others; XIII - To ensure permanently the environmental education as an instrument of awareness, citizenship formation in all levels and age groups.

In this way, it proposes to guarantee to the citizens a better quality of life for the exercise of citizenship in general, establishing its principles, objectives, and instruments, emphasizing the responsibilities of the

government. This law also deals with the management and destination of solid and semi-solid waste, which must follow a technical approach with differentiated collection and integrated treatment.

For this collection to be properly separated, an integrated waste transportation system is required. The public authority is responsible for a technical study, prepared by the competent municipal agency and approved by the Municipal Council of Environment and Urban Development (Article 43°, §3°). In this way, the municipality must seek appropriate technologies that are less costly to implement and operate; maintenance; in minimizing health risks; and to the wellbeing of the community and environmental quality.

On the other hand, the traffic of garbage collection vehicles should be avoided, especially the loads composed of by-products or hazardous materials through permanent preservation areas, as well as the transit of trucks through densely populated areas (Article 43°, § 4°). Regarding reuse, the pruning's, and remains of trees, whenever possible, will be transformed into charcoal for certain companies such as: bakeries, potteries, and ceramics (Article 43°, § 3°).

According to the referred law, the Executive Branch shall maintain a system of selective collection of garbage, with separation of waste at its origin, into two distinct classes - inorganic waste and organic waste - aiming at its recycling (Article 44°). Under these perspectives, the competent body will maintain the collection of dry residues and they will be independently transported for recycling purposes, and the wet residues will be collected and forwarded for final disposal.

Consequently, the municipality may be committing an infraction by omission with what is proposed in PERS in its articles 51 to 53, by not having a survey of possible contamination of the water table in the locations of its dumps [17].

Thus, the agencies responsible for enforcement, together with civil society, should act effectively to seek ways to manage the RSU's of Baturité, with responsibilities and efficiency suitable for environmental protection.

To comply with this legislation, the Baturité City Hall, aiming to encourage shared responsibility with the population, seeks a partnership with the Education and Sports Secretariat, understanding that formal education can contribute to attitudes that aim to improve society's quality of life.

Consequently, he sanctioned a new law No. 1.221/2003, which provides for environmental education in schools of the Municipal Education Network. Thus, EE gains prominence in the school network, bringing a

proposal to stimulate students to defend and preserve the environment for present and future generations, emphasizing the curriculum composition (Article 1°).

The Municipal Department of Education and Sports is responsible for the adequacy of programmatic content and interdisciplinarity of the school curriculum, in accordance with the law No. 9.795, 1999 (Article, 4°). Thus, the programmatic content relating to EE has an instructional and educational character, without, however, failing students (Article, 3°). This demonstrates a timid concern of the government with learning and deepening the concepts of Environmental Education, enabling sensitization of students to change their attitudes and behaviors habits and performance of sustainable actions in society. Moreover, the law does not present indications for a continuous or even punctual practice, such as the organization of environmental fairs and social projects in schools involving the community.

Among the strategic areas, the "Area-Program 5" - Regional Human Support Infrastructure, focusing on the intervention "Sanitary Sewage with the elaboration of the Massif Regional Plan of Sanitary Sewage/PRES MACIÇO and recovery and expansion of the sanitary sewage systems (networks and simplified systems) of the Massif" stands out as relevant because it deals with SR's. Still on the intervention of the regional development plan, it discusses the elaboration of the Regional Plan of RS's of the Massif/PRRS MACIÇO and implementation of the regionalized system of collection and destination of garbage in the Massif [18].

Starting from the intervention on the SR's of the PDR, the city of Baturité, would participate, with other municipalities in the region, in a public consortium based on the Federal Law No. 11.107/2005 for the creation of a regional landfill [19]. This consortium was formed in 2007, through AMSA aiming at the management and administration; associated public services, for the construction, maintenance, and management of the regional sanitary landfill, located at the headquarters of the municipality of Baturité.

IV. CONCLUSION

After the investigative process undertaken in this research including: the field visits, the contact with the catadores/waste pickers, the informal relationship during the visits, and the analysis of the documents, it was possible to have a comprehensive view of the management situation of the USW in Baturité and of the situation of those subjects inserted in the dump.

It was also observed that the waste pickers are in a situation of social vulnerability. They live in a state of extreme need. They live in the most unhealthy and dangerous conditions possible. They live in the same place where they work, without any sanitary conditions. They live and coexist with garbage. Their "survival" is determined, solely and exclusively, by the materials that they collect from that environment and that can be recycled and sold; even if the "market value" is not at all adequate, as is their income. However, we can see that this is one way, if not the only way, found to deal with the capitalist and consumerist society. For this is how the waste pickers find a way to insert themselves into it, a way to establish themselves socially and in the labor market, even if in a cruel way.

The study also allowed us to conclude that, among the difficulties encountered by the collectors of the garbage dump, the lack of water and energy in that environment, and the lack of attention to health by the public authorities and the subjects themselves, due to the problems that arise from the presence of the garbage, with its various vectors, stand out.

Still on the financial aspect, besides leading them to a lack of income for an adequate support for the family, they face great difficulties for not having a fixed buyer, being at the mercy of a buyer who "dictates the rules of the market".

It is worth pointing out that the insecurity of living in a shed on their own site is not the only one of this situation. Much worse is not being able to leave for a long time, lest they be invaded by others.

It is obvious that the lack of organization of the subjects and the absence of the municipal public power in minimally organizing and valuing them, leads the collectors/residents to face several social and environmental problems for living together with the garbage, showing that men and women in full productive life, degrade themselves, together with the garbage they survive on.

It is also necessary to say that this proposal is only the "initial step" of a journey that, starting by getting it right, should be continued with more in-depth studies on the environmental issue involving both the municipality of Baturité and the other municipalities of the Maciço de Baturité Region, State of Ceará in Brazil.

REFERENCES

- [1] RICHTER, L. T. The importance of awareness and selective garbage collection in the city of Palmitos - SC. Leonice Terezinha Richter. 2014. 84 sheets. Monograph (Specialization in Environmental Management in Municipalities). Federal Technological University of Parana, Medianeira, 2014.

- [2] BARROS, V. A.; PINTO, J. B. M. (2008). Recycling: work and citizenship. In _____; KEMP, V.H. Kemp & H. M. T. Crivellari (Orgs.), *Urban Scene Collectors, construction of socio-environmental policies* (pp. 65-82). Belo Horizonte: Autêntica.
- [3] TAVARES, I. A. F. From garbage to recycling: a view on the work of collectors in the Municipality of Divinópolis [manuscript] / TAVARES, I. A.F. - 2009. Dissertation (master's degree) - University of the State of Minas Gerais, Educational Foundation of Divinópolis. 85 f., enc.
- [4] MEDEIROS, L. F. R. de; MACEDO, K. B. Recyclable material collector: a profession beyond survival. *Psychology & Society*, 18 (2): 62-71; May/Aug. 2006.
- [5] BERTO NETO, J. Gas emission measurements in eight urban solid waste landfills in the State of São Paulo - Brazil. BERTO NETO, J.; Thesis presented to the São Carlos Engineering School of the University of São Paulo, as part of the requirements for obtaining the title of Doctor of Science in Environmental Engineering. Advisor Valdir Schalch. - São Carlos, 2009.
- [6] MESQUITA JÚNIOR, J. M. Integrated management of solid waste (clean development mechanism applied to solid waste). Coordinated by Karin Segala. - Rio de Janeiro: IBAM, 2007.
- [7] BRAZIL. Ministry of Education, General Coordination of Environmental Education: Ministry of Environment, Department of Environmental Education: Let's take care of Brazil: concepts and practices in environmental education at school/ [Coordination: Soraia Silva de Mello, Rachel Trajber]. - Brasília: UNESCO, 2007. 248 p. Available at: <http://portal.mec.gov.br/dmdocuments/publicacao3.pdf>
- [8] SEVERINO, A. J. *Scientific Work Methodology*. 26. ed. - São Paulo: Cortez, 2013.
- [9] XAVIER, A. R. et al. Research in Education: historical and theoretical-methodological aspects. *EDUCA Multidisciplinary Journal in Education*, [S.l.], v. 8, p. 1-19, Jan. 2021. Available at: <https://www.periodicos.unir.br/index.php/EDUCA/article/view/4627/3815>.
- [10] GIL, A. C. *How to design research projects*. Sao Paulo: Atlas, 1998.
- [11] COSTA, E. A. P; COIMBRA, C. M. B. Nem criadores, nem criaturas: we were all devires in the production of different knowledges. *Psychology & Society*, 20 (1): 125-133, Niterói, 2008.
- [12] YIN, R. K. *Case study: planning and methods*. Porto Alegre: Bookman, 2005.
- [13] VERGARA, S. C. *Methods of research in the field of administration*. 4. ed. Sao Paulo: Atlas Publishing, 2010.
- [14] LEAL, V. B. *History of Baturité: Colonial Period*. Secretary of Culture and Sports of Ceará, Fortaleza, 1982.
- [15] LIMA, J.D. *Urban Solid Waste Management in Brazil*. 1 Ed. ABES. Campina Grande - PB, 2001, 267p.
- [16] PPA - Plano Plurianual de Baturité 2014-2017. Available at: http://baturite.ce.gov.br/arquivos/35/PLANO%20PLURIANUAL_Anuar_2014_0000001.pdf.
- [17] CEARÁ. Law Nº 13.103, of January 24, 2001. State Policy for Solid Waste. Government of the State of Ceará, Fortaleza, SEMACE, 24 Jan. 2001.
- [18] PDR. Maciço de Baturité - Regional Development Plan - PDR. Available at: http://conteudo.ceara.gov.br/content/aplicacao/SDLR/desenv_regional/gerados/PDR_Macico_Baturite.pdf.
- [19] BRAZIL. Ministry of Education. *Manual de Educação para o consumo sustentável*. Brasília: MEC/MMA/IDEC, 2005. 160 p. Available at: <http://portal.mec.gov.br/dmdocuments/publicacao8.pdf>
- [20] Constitution of the Federative Republic of Brazil. Senate, Brasília, 1988.