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# Analysis of electro-electronic waste management in the rodolfo aureliano forum of the court of justice

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**Abstract**
The significant increase in the generation of solid waste in the world has become a concern for public authorities, and the proper disposal of this waste is a possible alternative route to minimize the negative impacts caused by the accumulation of toxic waste in the planet's ecosystems by individuals and society's legal requirements. The objective of this study is to analyze the efficiency and effectiveness of the management of IT components at the Court of Justice of Pernambuco (TJPE), more specifically, at the Rodolfo Aureliano Forum, based on the Sustainable Logistics Plan (CNJ), which provides for the creation and powers of socio-environmental units or centers in the bodies and councils of the Judiciary and implementation of the respective Sustainable Logistics Plan (PLS-PJ). The methodology of this study will be through a bibliographic survey including qualitative and quantitative research that by collecting data, through questionnaires, about the management and destination of the informatics components of the Rodolfo Aureliano Forum, it is sought to understand the benefits of the application of resolution and management of electronic waste in this public space. This study is relevant, insofar as it highlights the importance of adopting sustainable measures to carry out the correct management of electronic waste and, in the same way, is justified by the possibility of finding new sustainable routes for the proper management of waste arising from the activities of the activities of the in Pernambuco, that is, the work seeks to understand in the observable field the application of the resolution and the benefits achieved in a state public body. It is concluded that it is possible to perceive that the TJPE, specifically the Rodolfo Aureliano Forum, is in the process of structuring the sustainability management model according to Resolution 400/2021, which revoked Resolution 201/2015.

**Keywords:** degradation; dangerous waste; management; public agency

## Introduction

The population increase evidenced in recent years by the Brazilian Institute of Geography and Statistics (IBGE) and the increased demand for electronic products by the population and public and private companies have brought a significant increase in the production, consumption and disposal of electronic products. In a recent study by Forti for the year 2020, in the annual report of the Global E-Waste Monitor, it was pointed out that in the last five years there have been increases in the amounts of electronic waste and population consumption of these products, which means an alert on the disposal of these products in the environment (FORTI, 2020) [17].

Solid waste, especially electronic waste, is diagnosed as a problem when improperly disposed of by society. This problem is most evident when one considers that society is with the rapid consumption, temporary and without any responsible awareness of the disposal of these products, because the acceleration in production causes a greater amount of goods to be produced with various materials in its composition, such as plastics, glass and heavy metals, which causes a large number of residues, fruit of the high demand of goods that end up obsolete time and without a correct final destination. That's what author Demajorovic has already stated in his most recent study of 2016. (DEMAJOROVIC *et al*., 2016) [15].

In 2010 alone, Brazil produced 60.8 million tons of municipal solid waste, which according to data from the Brazilian Association of Public Cleaning and Special Waste Companies (ABRELPE), the average waste per person/year was 378 kg. Also according to abrelpe's Overview of Solid Waste in Brazil in 2020 (ABRELPE, 2020) [1], in 2019 in Brazil, 2.1 million tons of electronic products were generated, equivalent to 10.2 kg per inhabitant, and even evidencing this expressive number, we encountered difficulties in implementing policies for the management of this waste nationwide in public and private companies.

As a way to mitigate the incorrect disposal of waste and propose efficient management by national laws and decrees, the Constitution of the Federative Republic of Brazil of 1988 deals with the national economic order and aims to ensure to all a dignified existence, according to the dictates of social justice, observed among its

principles that of the defense of the environment; equally, everyone is expected to have the right to the ecologically balanced environment (BRASIL, 1988).

From this perspective, the National Environment Policy, Law No. 6,938/81 (BRASIL, 1981), aims to create article 2, the preservation, improvement, and recovery of environmental quality conducive to life, aiming to ensure, in the country, conditions for socioeconomic development, the interests of national security and the protection of the dignity of human life.

In this respect, Federal Law No. 12,305 of August 2, 2010 (BRASIL, 2010) [8, 9], which instituted the National Solid Waste Policy, provides for its objectives and instruments, as well as guidelines related to integrated management and management of solid waste, including hazardous ones, to the responsibilities of generators and public authorities. As a conceptual analysis, the law defines solid waste as:

Material, substance, object or well-disposed resulting from human activities in society, to which final destination is obliged to proceed, in the solid or semi-solid state, as well as gases contained in containers and liquids whose particularities make it impossible to launch into the public sewer system or in bodies of water or require for this technical or economically unfeasible solution in the face of the best available technology. (Law No. 14,236/2010).

In turn, Resolução 400/2021 of the National Council of Justice (CNJ) aiming to give more effectiveness in the National Solid Waste Policy, applying it in the Brazilian Judiciary, instituted in Article 2 that the organs and councils of the Judiciary should adopt organizational management models and structured processes in the promotion of environmental, economic, and social sustainability.

In this Resolution there is a provision of ten minimum indicators that should be applied in the organs and councils of the Judiciary to evaluate the environmental and economic performance of the Sustainable Logistics Plan (PLS), among them, the management of solid waste, including the electronic waste produced within the judiciary.

Many electronic products have components made with heavy metals and toxic substances that, in contact with the human body, without proper precautions, can cause skin, nervous and blood system diseases, in addition to contaminating soils, groundwater and the atmosphere causing ecological imbalances. (KRUGLIANSKAS and PINSKY, 2018) [23].

Bringing the discussion to the research object of this work, the electronic waste can be defined, according to Brazilian Standard ABNT 16,156/2013, as all those from electronic equipment. They are parts and parts that reach the end of their useful life and have their use discontinued. They are also called WEEE (Waste Electronic Equipment).

Thus, electronic waste is goods resulting from human activities and use that have its useful life completed and discontinued, these residues present a problem for its disposal, because technical solutions are needed economically and environmentally viable both in the private initiative and in the public initiative.

Based on this premise, as a central hypothesis it is assumed that the Court of Justice of Pernambuco, specifically in the Rodolfo Aureliano Forum, has a small performance in the disposal/disposal/recycling of electronic waste effectively to those postulated in the current legislation, because when analyzing the Sustainable Logistics Plan of the TJPE we find little emphasis on the procedures for electronic waste. Thecurrent practices of recycling these equipments can be considered primary, given that in this public body of the judiciary there is little argument for institutional policies for the management of WEEE (ARAÚJO, 2021) [4].

This corroborates the results of Moura (2020), where he demonstrates problems such as deficient structures, lack of incentives to servers to sustainability issues of the TJPE and the need to reformulate the management as to the training to double solid waste.

In this case, for the Rodolfo Aureliano Forum, hypotheses to be studied and answered in this work are: Is the disposal of solid electronic waste of the Court of Justice of Pernambuco in line with sustainability actions provided for in current legislation?

Thus, the present study aims to make a diagnosis based on the characterization of electronic waste produced in the Rodolfo Aureliano Forum, according to current legislation and to ascertain whether it is observed within the judiciary of Pernambuco. As a specific objective, to analyze how the management of these residues is carried out, to classify which main products are generated and their quantities, how storage, sorting and packaging are made and what the destination of unusable waste is carried out for the public agency, based on the time lapse of the years 2016-2021.

Thus, this article contributes to the current literature evaluating the legal framework of public policies aimed at the management of electronic waste, as well as, in the way the implementation of these policies and the effectiveness with regard to environmental indicators of waste management in a public agency takes place. This study is relevant, as it highlights the importance of adopting sustainable measures to carry out the correct management of waste and is justified in the possibility of finding and proposing new sustainable environmental routes for the proper management of waste from the activities of the Judiciary of Pernambuco.

**Methodology**

In view of this research, this work is exploratory research of investigative character of the process of solid waste management in the Court of Pernambuco in relation to electronic waste at the Rodolfo Aureliano Forum, located in the city of Recife do Estado de Pernambuco, Brazil.

**Definition of the Area of Study**

The Rodolfo Aureliano Forum is situated, more specifically, in the neighborhood of Joana Bezerra, with shows in Figura 1. In its surroundings, the population growth occurred in a disorderly manner and with great socioeconomic disparities. The great social and economic inequality and the high rates of violence characterize the community (BARBOSA; MELO; VERARDI, 2016) [6].

The exploratory research aims to approach the theme, creating greater familiarity in relation to the fact or phenomenon, assimilating data that can inform the real importance of problem management, what already exists about or even new sources of information, which is usually done through bibliographic and documentary surveys, interviews and on-site observations (El – DEIR, 2020) [16].


Source: Google Earth (2022).

**Fig 1:** Location of the Rodolfo Aureliano Forum.

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Initially, the primary data were collected at the Rodolfo Aureliano Judge's Forum, *with on-site visit and* application of an e-mail questionnaire with the active servers of the TJPE that work directly with the management of WEEE. In this Judicial Unit, data were collected to characterize the electronic waste and evaluated the efficiency of resolution 400/2021 of the National Council of Justice within the judicial power of Pernambuco analyzing the process of reuse, disposal and management of these wastes. The option to work with this Forum was motivated precisely by the concentration of electronic equipment that are destined to this location for the correct treatment and destination.

At first, a review of the literature of the current legislation was carried out in order to know the legal framework of internal and external legislation regarding waste management. The bibliographic survey covers institutional documents, deepening the PLS/TJPE Sustainable Logistics Plan; Federal Constitution of 1988; The resolution of 400/2021 of the CNJ; and Law 12.305/2010, which instituted the National Solid Waste Policy for management, disposal and disposal; these, important in the evaluation of the middle activity of the institution studied, especially the sustainability indicators of the Sustainable Logistics Plan.

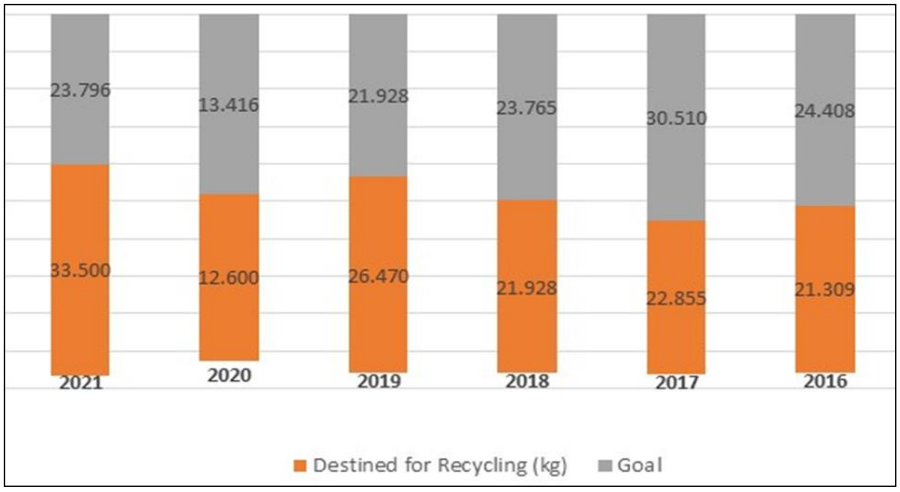
In a second moment, the research was carried out through the application of a semi-structured questionnaire in the department responsible for receiving electronic waste, via e-mail, and subsequent analysis of the responses in the light of the ABNT NBR Standard 16.156 and the current laws on the management of this type of material to answer the hypothesis raised about the management process within the Rodolfo Aureliano Forum.

The technique chosen was the semi-structured interview that allows to collect response from the subjective experience of a source that holds information that one wishes to know, classify, and organize them by types. The questionnaire was elaborated based on questions with alternatives of multiple choices with the possibility of including questions that are necessary in the course of the work to clarify what is intended to be studied and add value to the results of the research (GIL, 2010).

Subsequently, a comparison was made of the collected data and the norms that discipline the process of management of electronic waste, both at the national/state level and at the internal level of the agency. At this moment, it will be verified in the literature which is the best alternative for the efficient management of such materials and/or propose solutions that only a more detailed and specific study, as proposed, can identify.
Finally, in possession of the results, we analyzed the best alternative with emphasis on resolution 400/2021 of the National Council of Justice within the judicial power of Pernambuco about the management of electronic waste. With these collected data, the analysis was performed through two procedures: the quantitative data were separated by categories, tabulated, analyzed, organized, and presented in tables, graphs, figures, and tables, using microsoft office programs, aiming at greater ease to visualize the answers and to better proceed to discussion and understanding. Regarding the qualitative results, the Content Analysis methodology proposed by Bardin (2011) [7] was adopted, seeking to understand the phenomenon and the universe studied by applying the knowledge acquired in the formation and study of the research object.

**Results and Discussion**

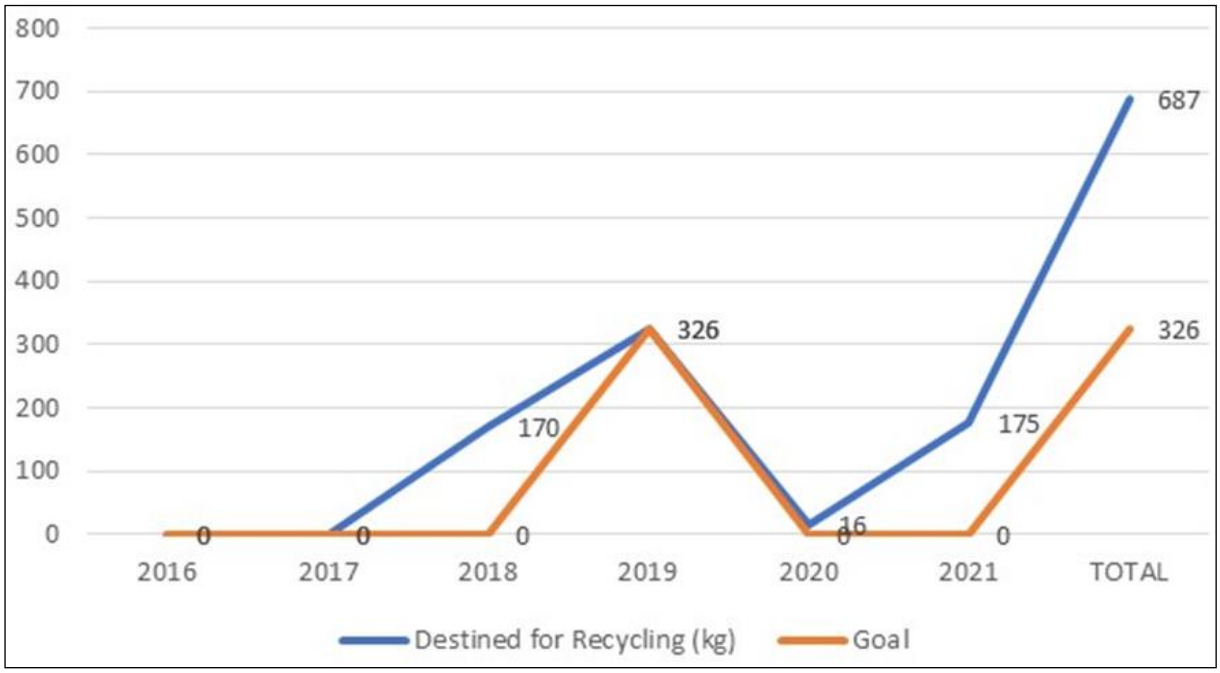
The research allowed the observation and understanding of the processes involving the management and management of electronic solid waste in the Rodolfo Aureliano Forum and the practices already existing in this institution that corroborate good environmental practices starting from Resolution 201/2015 (repealed) until resolution 400/2021.
It is important to emphasize that the years 2016 and 2017 the TJPE was still with the Embryonic Logistics Plan, following Resolution 201/2015 and thus had not designed the indicator plan that for the other years were being added, so in some indicators studied, for these years, we will not find available data.
In the TJPE are produced several solid wastes as paper; health waste; information technology and its supplies; Batteries; batteries and lamps. For all the years studied, there is no data regarding plastics, metals and glass, and there is no information as to why such data is not on the monitoring radar, this is not specified in the report, but it is possible to notice that in addition to these mentioned, plastics, metals and glass are part of the equipment produced, as shown in the images below, however, these data are not yet part of the TJPE's Sustainable Logistics Plan (PLS). In this case, considering plastic one of the largest components of pollution and that worldwide is produced about 300 million tons of plastic waste, and only 14% are collected and 9% are recycled, it is essential to monitor this data on the radar of pls tjpe already in this new resolution 400/2021.
The REE are stored according to their physical characteristics in an appropriate place to comport them, are labeled, and classified as obsolete (In disuse and exceeded) and as Electronic waste (Anti-economic where its repair is greater than 50% of the current value), this allows the creation of a database that according to Xavier; Ottoni and Nascimento, enables future actions of the institution in order to provide strategic information for the realization of the reverse logistics of WEEE (XAVIER; THETTONI; NASCEMENT, 2019).
The process of diagnosis of WEEE and its classification follows a flowchart that is presented below. In this process are involved several actors that in different phases perform the diagnosis of the electronics in the possibility of repairs, utility and use until its classification as obsolete or electronic waste that, at the end, will be forwarded via donation, auction, or disposal.
In the questionnaire applied to the agency it was possible to identify (Figure 2) that in 2016 the TJPE allocated recycling about 21,309 kg of solid waste, and in 2021, about 33,500 Kg. This shows that the trend for the six years of studies was an increase of 63.60%, that is, the TJPE is a possible source of pollution with electronic waste. In the six years, the total solid waste destined for recycling presented an average of 23,000 kg and only in the years 2019 and 2021 was that the TJPE was able to achieve the stipulated targets, it is inferable that in previous years, as they were in the implementation phase of sustainability policies, it was not possible to achieve the pls goals of the body.




Source: The Authors (2022).

**Fig 2:** Solid Waste Destined for Recycling 2016-2021.

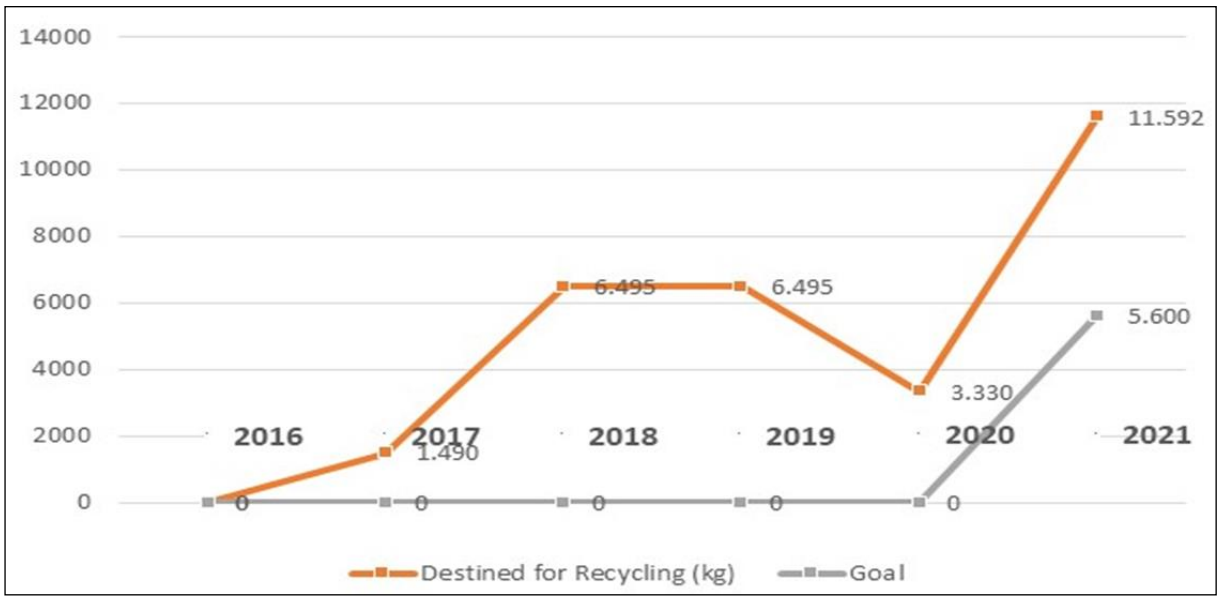
Regarding the types of WEE most produced in the Forum, question 01 of the questionnaire, it is possible to notice that the agency produced in 2021 175 kg of small batteries and batteries, which under the responsibility of the Selective Collection Center (NUCS) coordinates and monitors the collection through the implementation of collectors in certain buildings. For the years 2016 to 2017 there are no data available, where the targets from 2018 are presented at 170 kg collected and with a collection of 326 kg in 2019, a decline in 2020, which can be explained by the COVID-19 Pandemic and a continuity in 2021 according to Figure 3.




Source: The Authors (2022).

**Fig 3**: TJPE Battery and Battery Destination.

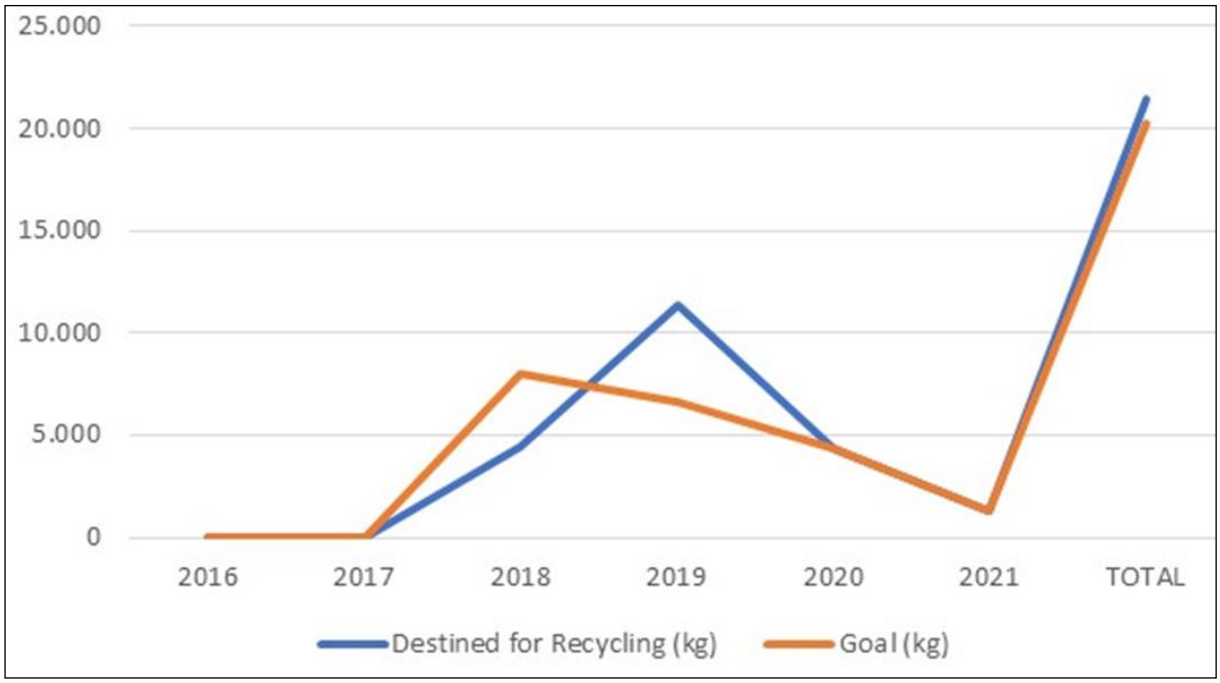
Also, there was the collection of computer components and peripherals (computer waste and printing supplies), in which the TJPE allocated about 29,402 kg of equipment in the six years of study. The follow-up began in 2016 and gradually increased with a drop in 2020, and these indicators were managed by the ICT Asset management sector – GEATIV/SETIC, demonstrated in Figures 4 and 5.




Source: The Authors (2022).

**Fig 4:** Disposal of Computer Waste

The collection of these two types of waste began in 2017, in 2020 it showed a fall, it is believed that the *pandemic, with the Home Office* of servers, started in 2020, has contributed to this decline.




Source: The Authors (2022).

**Fig 5:** Printing Supplies Destination.

With this information it is possible to realize that the main electronic waste produced in the forum are batteries, batteries, components and computer peripherals, given their activity. It is also possible to classify the agency as a possible source of pollution, because these data are described in the Annual Performance Report of the Sustainable Logistics Plan of the TJPE - 2015 to 2021 with the objective of evaluating the sustainability index of the institutions.

Regarding the total amount of electronic waste produced annually and its quantities, question 02 and 03, the answer obtained was that from the Sustainability Center, there is no survey per building of this type of waste, but observing Resolution 200/2015, - Repealed by Resolution 400/2021 - it is possible to realize that the concern with electronic waste was not something explicit within the judiciary, that is, there was no emphasis on worrying about such residues, but it is possible to realize that Resolution 400/2021 brought this concern more clearly, which can only be seen in the next indicators of the TJPE reports.

Regarding question 04 and 11, the forum, until 2021, has a program for the management of the few electronic equipment collected, such as batteries and computer components and peripherals. These are forwarded (via donation) to other public agencies and philanthropic entities, for those the destination is in partnership with Sindvarejista (Retail Trade Union) of Pernambuco.

This indicates a synergy in the management of waste that is classified as unusable to the institution, but which have some use for other stakeholders, one of the points to be raised is the importance of the management chain that is formed in partnerships and donations, which becomes a form of correct destination, whether for reuse, recycling, treatment or final disposal, according to the PNRS and as recommended in the Giese 2021 report which states that partnerships with cooperatives, associations and other entities interested in recycling WEEE are essential in reverse manufacturing and play a key role in reverse logistics (GIESE, 2021).

In question number 05, we were asked what characteristics of THE ree produced in the forum in relation to the contaminant material, because knowing which are the predominant components in the residues of the generating sources makes it possible to know the correct management and disposal, as recommended in ABNT 16.156/2013 and described in Soares's research in 2020. (SOARES, 2020). In the organ it was possible to perceive that the residues are classified by the interviewees as high contaminant material, that if not properly destined they can cause irreversible damage.

It is easy to see this if we look at the materials produced in the institution: batteries, batteries and computer peripherals that have in their composition high material contaminants for soils, water and human health, also have materials that can be recycled and returned to the production chain, generating employment and income is the case of materials such as plastic, glass, iron, aluminum that do not have data in the reports released.

Asked what motivates the action of managing the WEE the answer to question 06 was objective and clear: "social and environmental responsibility, promoting the reuse of unusable equipment for the activities of the agency, but possibly useful to others rather than provoking the end of its useful life". In this, it is possible to notice that the process of reuse of PNRS is what was described and followed, because as mentioned in previous responses, all collected material that still has some utilities are given to philanthropic entities that can benefit from such materials.

The screening process, question 07, has two classifications, for the components that were presented. For batteries, lamps and batteries, the life of the product is considered, which is eventually collected in collectors scattered throughout the court buildings and for the components and peripherals of computers when unusable to the organ. It is important to emphasize that in the collection of batteries, lamps and batteries, are not only of the agency, but any employee or person of the community can bring their personal consumption and deposit in the collection points, because the dissemination has made many servers aware of the agency, as well as the community.

All this synergy of collection and donations falls on how these wastes are stored, what we can observe from question 08, is that the correct storage is a step in the chain of management of solid electronic waste very important. In the TJPE, in the research forum, batteries and batteries are stored in hermetically sealed pumps of 5 liters, with handle to facilitate their transport and forwarded to the competent sector for articulation with the waste receiving entity; computer components are identified and stored in specific rooms destined for this by GEATIV/SETIC where in the donation process, they are entombed and collected in the Terms of Donation.

To bring another solution in the chain of management of electronic waste, it was questioned the possibility of tjpe purchases to require from the supplier (by bidding) some reverse logistics clause as a solution, question 09 and 10 and demonstrated in a diagram in Figure 6. The answer obtained was that it is not possible to respond accurately, so it is inferable that this can be a way for TJPE to implement in its procurement bids, adopting as one of the solutions and basis of its sustainability indicators, given the high volume purchased and high volume discarded.


Source: The Authors (2022).

**Fig 6:** Reverse logistics with producer

This suggestion corroborates the publication of Machado *et. al*. (2021) [22] stated in the National Guide for Sustainable Contracts that sustainable bids because it is a comprehensive term in the Bidding Law, since it is not specified in the law, covers from the planning, supervision of contracts and the management of solid waste, that is, there can be included new routes, such as requiring the supplier that at the end of the useful life of the equipment purchased he also cooperates with the final and correct disposal of the WEEE.

Asked what the potential risks observed in the storage of these components, the answer to question number 12 was that they are highly contaminating the environment, and for those who handle, the answer was safety and health, even with their temporary storage, but in question number 13 that questions precisely whether workers operating with PPE materials we did not get a return.

In the question that concludes our research, we were asked if there is control and supervision after the disposal of the material to know the correct disposal and was informed that in the case of batteries, the agency receives the Declaration of Destination, because otherwise this would make it impossible for the receiving entity (Sindvarejista) to forward to treatment companies. This shows the institution's concern about whether the receiving entity of the WEEE qualifications has to receive the contaminant residue, an important step in the disposal process.

It is good to emphasize that in public agencies, and even public and private companies, the responsibilities of managing their electronic waste cannot be seen as obstacles to development, but something that will bring a

consensus that the solution for WEEE lies in a joint effort, this effort will provide innovations and increasingly improve existing postulates. (SOUZA and NUNES, 2021).

**Consideral Final**

Resolution 400/2021 of the CNJ establishes that all organs of the judiciary must have organizational management models and structured processes in the promotion of environmental, economic and social sustainability. Thus, and based on what was presented, on the theoretical basis, in the applied methodology, it is concluded that it is possible to perceive that the TJPE, specifically the Rodolfo Aureliano Forum, is in the process of structuring the sustainability management model according to the adjustment of Resolution 400/2021 that repealed Resolution 201/2015. As this is recent, published in 2021, it is not yet possible to envision the indicators determined in their entirety for decision-making, this shows us a fragility of the body compared to the current legislation, because the indicators are formed with data month by month and by the annual reports of the PLS 2016 to 2021 and the questionnaire applied is not possible to analyze the indicators pointed out, because in some years these data do not exist and in others do not reach the established goals, and some indicators were included in later years, which makes a more detailed comparison impossible.

Considering that when asked what quantities of WEE produced in the forum and which are more produced, we obtained as a return that from the sustainability core there was no survey per building of this type of waste, that is, this confirms our central hypothesis raised that the Rodolfo Aureliano Forum has a small performance in the recycling of WEEE, because the electronic waste presented in the answers was limited to batteries and batteries, computer components and peripherals, not including air conditioning residues, refrigerators, drinking fountains and others that are within the classification of WEEE.

The few electronic wastes presented that are collected are destined to collectors and philanthropic entities interested in the form of donation. This destination follows the current rules and also adds an important point that is the opening of the possibility for servers and community personnel to use the collection points of the agency as a place of final destination when the end of the material's useful life arrives. This allows a greater coverage of collection, but the amount collected with third parties and the amount generated in the agency should be presented separately, because only then can an index appropriate to the body that serves as a balance sheet for sustainability policies.

According to the results presented in this research, the Rodolfo Aureliano Forum has received the information correctly to adapt to the laws and norms that deal with the final disposition of the WEEE, but until the moment of contact to obtain data to guide this research, it was not possible to estimate accurate monitoring data of the institution, according to Resolution 400/2021 of the CNJ. For better monitoring of the data, it is necessary that the TJPE should be able to report on the upcoming reports to present weighing data on the electronic waste produced, as we will have a more robust estimate to evaluate the proposed indicators.

This research presented limitations that need to be analyzed, such limitations require complementation and directions for future studies. The suggestion for future researchers is to analyze the next annual reports of the CNJ in relation to the indicators of Resolution 400/2021 and study the influence of laws and norms in force in the sustainability policies of public agencies.

**References**


1. ABRELPE. Overview of Solid Waste in Brazil Report, 2020. Available in: https://abrelpe.org.br/panorama/. Access on 04/04/2022.
2. Association Brasileria Technical Standards. NBR 16.156/2013: Waste Electronic Equipment - Requirements for Reverse Manufacturing. Rio de Janeiro, 2004.
3. Almeida Nicoly, Lima Heremita, Lima Laís, Junior Márcio, Bento Petrus. Ifertilizer: Web Platform and Intelligent Recycle Bin for organic waste management. *In*: National Meeting of Computing of the Federal Institutes Encompif), 6. 2019, Bethlehem. The anais [...]. Porto Alegre: Brazilian Computer Society, 2019. DOI: https://doi.org/10.5753/encompif.2019.7198.
4. ARAÚJO, Mônica Maria Crêspo de; Sustainability and social inclusion in the management of electronic waste of the public judicial deposit of the TJPE in Olinda-PE. / Monica Maria Crespo de Araújo. Recife, 2021.
5. Baldé CP, Forti V, Gray V, Kuehr R, Stegmann P. The global E-waste monitor 2017: quantities, flows and resources. Geneva And Vienna: United Nations University, 2017, 116.
6. Barbosa AA, Melo EM, de Verardi CA. Joana Bezerra Island: Coque. (neighborhood, Recife). Joaquim Nabuco Foundation, Recife, 2016. Available in: http://basilio.fundaj.gov.br/pesquisaescolar%20/index.php?option=com_content&view=article&id=1111%3Ailha-joana-bezerra-coque&catid=44%3Aletra-i&Itemid=1. Accessed: 12 Oct. 2021.
7. Bardin L. Content analysis. Lisbon: Editions, 2011, 70.
8. Brazil. Law 12,305 of August 2, 2010. It establishes the National Solid Waste Policy. Available in: <http://www.mma.gov.br/cidades-sustentaveis/residuos-solidos/politica-nacional-deresiduos-solidos/contextos-e-principais-aspectos>. Accessed: 03 April 2022.
9. BRAZIL. Law No. 14,236, Of December 13, 2010. It provides for the State Policy of Solid Waste, and gives other povidências, Brasília, DF. Available in: https://legis.alepe.pe.gov.br/dadosReferenciais.aspx?id=7020. Access on, 2022.

10. BRAZIL. Law No. 13,467 of July 13, 2017. Alterates and consolidation of Labor Laws (CLT)., Brasília, DF, 2017.
11. BRAZIL. Law No. 6,938 of August 31, 1981. It provides for the National Environment Policy. Brasília, Df, 2011.
12. CÂNDIDO, Mariana Coelho, ALMEIDA, Emerson Gervásio de. Social and environmental responsibility within the Court of Justice of the State of Goiás. Humanities & Technology in Review (FINOM) - ISSN: 1809-1628, 2019, 19.
13. CEMPRE. Electronic Services. CEMPRE: Business Commitment for Recycling. 2017. Available in: < http://cempre.org.br/servico/eletroeletronicos>. Accessed: 03 April 2022.
14. Correia, Mary Lucia Andrade. DIAS, Eduardo Rocha. Sustainable development, economic growth and the principle of intergenerational solidarity from the perspective of environmental justice. Amazon Planet: International Journal of Environmental Law and Public Policies. Macapá, 2016:(8)63-80.
15. Demajorovic Jacques, Augusto, Eryka Eugenia Fernandes, Souza MARIA TEREZA SARAIVA DE. Reverse Logistics De Reee In Developing Countries: Challenges And Perspectives For The Brazilian Model. Available in: https://www.scielo.br/j/asoc/a/hsym9V35CCXBNfn4sbNmctD/?lang=en. Accessed 27/09/2022. https://doi.org/10.1590/1809-4422ASOC141545V1922016.
16. EL-DEIR, Giovanetti Soraya. Dematerialization of solid waste: strategies for sustainability. 2020. Edufrpe and Gampe/UFRPE. gampe/UFRPERecife, 2020.
EL-DEIR, Giovanetti Soraya. Solid waste: development and sustainability. 2020. Edufrpe and Gampe/UFRPE. gampe/UFRPERecife, 2020.
17. Forti Vanessa, Balde Cornelis P, Kuehr Ruediger BEL. Garam. The Global E-waste Monitor quantities, flows and the circular economy. Geneva And Rotterdam: United Nations University, 2020, 120.
18. Franco, Rosana Gonçalves Ferreira, Lange Liséte Celina. Estimation of the flow of waste electrical and electronic equipment in the municipality of Belo Horizonte, Minas Gerais, Brazil. Eng. Sanit. It's ambient. Rio de Janeiro,2011:16(1):73-82. Mar.. Available from: <http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1413- 41522011000100011&lng=en&nrm=iso>. Access: 25 Oct. 2020.
19. Giese, Ellen Cristine, *et al*. Cooperatives and the management of electronic waste / Ellen Cristine Giese (org.). [*et. al.*] - Rio de Janeiro: CETEM / MCTI, 2021. 60 p. ISBN 978-65-5919-005-8. Available in: file:///D:/DISSERTA%C3%87%C3%83O%20AILTON/Artigos%20Complementares/cooperativas-e-a-gestao-de-ree-.pdf. Accessed 08/09/2022. 2021.
20. Gil AC. Methods and Techniques of Social Research. 2010. Atlas Edition. São Paulo, 2010.
21. Google, I120. Google Earth website. http://earth.google.com/, 2022.
22. Machado, Alessandro Q. (Coord.); LONGATO, Carlos F.; Santos, L. Dainel; CELSO, V.; CARVALHO, Flavia G. de; PAZ and SILVA FILHO, Manoel; Bliacheris, Mark W.; Ferreira, Maria Augusta S. de O.; Barth, Maria Leticia B. G.; Santos, Mateus L. F.; Silva, Michelle Marry M.; Gomes, Patricia M.; Villac, Teresa. National Guide to Sustainable Contracts. 4th ed. Brasilia: AGU, August, 2021.
23. Kruglianskas, Isak; Pinsky, Vanessa Cuzziol. Strategic Management of Sustainability: Brazilian Experiences. Book. 1sted. (2018). Alta Books Publishing House, 2018.
24. Lenza Pedro. Constitutional law - 25. ed. - São Paulo. Saraiva Education, 2021. (Schematic Collection). Electronic book, 2021. Available at: https://forumturbo.org/wp content/uploads/wpforo/attachments/34579/5668-Direito-Constitucional-Esquematizado-Pedro-Lenza-2021.pdf. Accessed: 04/04/2021.
25. LIMA, Ketlin Feitosa de Albuquerque; ARAÚJO, Suely Mara Vaz Guimarães de. The effectiveness of sustainable public policies adopted by the Brazilian Judiciary in the light of CNJ Resolution No. 201/2015. IDP Working Paper, Brasilia, 2020, 3.
26. Luca, Guilherme Domingos de, Pozzoli Lafayette. Ethics In Society In A Relation To Law And Fraternity On The Concept Of Sustainability: Common Good And Dignity Of The Human Person. Revista Thesis Juris – São Paulo,2015:4(1):87-101.
27. Moura, Eduardo Lemos de; Cordeiro, Luiz Filipe Alves; SOUSA, Wanderson dos Santos; Melo, Daniele de Castro Pessoa de; MODENESI, Thiago Vasconcelos (Management of recyclable waste of the Court of Justice of Pernambuco: proposition of training of servers. 2020. Available in: http://revista.ecogestaobrasil.net/v7n17/v07n17a38.pdf. Access on 07/09/2022.
28. National Council of Justice (Brazil). Resolution No. 400 of 16 June 2021. Diário da Justiça Eletrônico, Brasília, DF, 2021.
29. National Council of Justice (Brazil). Resolution No. 227 of 17 June 2016. Diário da Justiça Eletrônico, Brasília, DF, 2016.
30. Souza, Luana Faria de, Nunes Janaína Rezendes. Pandemic - The Homeoffice As A Propellant of The E-Waste Generation, 2009. Available in: https://www.sinergia.edu.br/wp-content/uploads/2021/08/REVISTA-ELETRONICA-CORRETA-EDIC%CC%A7A%CC%83O-20-PANDEMIA-O-HOME-OFFICE-COMO-PROPULSOR-DA-GERAC%CC%A7A%CC%83O-DE-LIXO-ELETRO%CC%82NICO.pdf. Access on 08/09/2022. 2021.

31. Sant'Anna, Teixeira Lindsay, Machado, Rosa, Brito Mozar. Electronic Waste In Brazil And Abroad: Legal Differences And The Premence Of A Worldwide Standardization. Social and Environmental Management Magazine. 8. 37. 10.24857/rgsa.v8i1.822. 2014.
32. Santos, Renata Rodrigues Silva. DECONTE, Simone Ramos. E-waste and environment: the importance of recycling electronic waste. Article. Santa Rita De Cássia College - UNIFASC - Itumbiara/GO-Brazil. 2021.
33. Silcon Ambintal, What are the procedures of a waste disposal company in a pandemic? Available in: https://blog.silcon.com.br/quais-sao-os-procedimentos-de-uma-empresa-de-descarte-de-residuos-em-uma-pandemia/. Accessed 07/09/2022. 2020.
34. Soares, Emanuel Gomes (Hazardous Metals in REEs. Available on the website: http://plone.ufpb.br/tree/contents/noticias/metais-perigosos-no-reees Accessed on 09/27/2022. 2020.
35. Pernambuco Court of Justice - TJPE. Sustainable Logistics Plan. Report Year 2021. Available in: https://www.tjpe.jus.br/web/planejamento/pls-2020/2021/relatorios. Accessed 04/02/2022.
36. Pernambuco Court of Justice - TJPE. Sustainable Logistics Plan. Year 2020 Report. Available in: https://www.tjpe.jus.br/web/planejamento/pls-2020/2021/relatorios. Accessed 04/02/2022.
37. Pernambuco Court of Justice - TJPE. Sustainable Logistics Plan. Year 2019 Report. Available in: https://www.tjpe.jus.br/web/planejamento/pls-2020/2021/relatorios. Accessed 04/02/2022.
38. Pernambuco Court of Justice - TJPE. Sustainable Logistics Plan. Year 2018 Report. Available in: https://www.tjpe.jus.br/web/planejamento/pls-2020/2021/relatorios. Accessed 04/02/2022.
39. Pernambuco Court of Justice - TJPE. Sustainable Logistics Plan. Report Year 2017. Available in: https://www.tjpe.jus.br/web/planejamento/pls-2020/2021/relatorios. Access on 04/02/2022.
40. Pernambuco Court of Justice - TJPE. Sustainable Logistics Plan. Year 2016 Report. Available in: https://www.tjpe.jus.br/web/planejamento/pls-2020/2021/relatorios. Access on 04/02/2022.
41. UNIVASF - Federal University of the São Francisco Valley. UN Environment points out gaps in global plastic recycling. Available in: https://portais.univasf.edu.br/sustentabilidade/noticias-sustentaveis/onu-meio-ambiente-aponta-lacunas-na-reciclagem-global-de-plastico. Accessed 26/09/2022. 2019.
42. Xavier, Lucia Helena, Birth Hermann, Ottoni Marianna. Methodology for The Identification and Categorization of Companies Active in Waste Management of Electronic Equipment. Article. 2nd South American Congress on Solid Waste and Sustainability. IBEAS - Brazilian Institute of Environmental Studies. Available in: https://www.ibeas.org.br/conresol/conresol2019/II-014.pdf. Accessed 09/26/2022. 2019.
43. Zapater, James C. Vaitekunas (Preventionof prevention. Enciclopisthe day ofPUC-SP. São Paulo: Pontifícia Universidade Católica de São Paulo, 2017, 1. Availablein: https://enciclopediajuridica.pucsp.br/verbete/356/edicao-1/principio-da-prevencao-e-principio-da-precaucao