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Sustainable transformation: composting and social technology in a low-income condominium with the participation of researchers and residents

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Transformação sustentável: compostagem e tecnologia social em um condomínio de baixa renda com a participação de pesquisadores e moradores

RESUMO

O objetivo da pesquisa foi aplicar técnicas de compostagem e tecnologia social para tratar resíduos alimentares em um condomínio de baixa renda no sul do Brasil, com a participação conjunta de pesquisadores universitários e moradores. O intuito era não apenas reduzir o impacto ambiental causado pelos resíduos, mas também gerar composto orgânico de valor ambiental e agronômico. O projeto começou com uma visita observacional ao condomínio para identificar espaços adequados para a execução do trabalho. Em seguida, os pesquisadores promoveram o projeto por meio de cartazes e conversas diretas com os moradores. Após essa interação, foram realizadas oficinas de capacitação para os moradores participantes, totalizando 40 famílias e 122 pessoas. As oficinas abordaram temas como os impactos do desperdício de alimentos, segregação na fonte, o processo de compostagem e tecnologia social. Foram distribuídos materiais educativos para auxiliar no processo de aprendizagem, e recursos visuais, como oficinas e vídeos educativos, foram utilizados. Finalmente, o processo de compostagem foi implementado. A tecnologia social desempenhou um papel significativo ao longo de todo o processo. Durante as oficinas e interações com os moradores, os participantes se tornaram agentes ativos de aprendizagem, compartilhando conhecimentos tradicionais e integrando-os ao conhecimento científico. Os materiais educativos representaram uma ferramenta importante de tecnologia social, fornecendo informações de maneira acessível e motivacional. A participação ativa de pesquisadores e moradores também foi um aspecto positivo desta investigação, pois fortaleceu a comunidade do condomínio, criou vínculos sociais e promoveu a conscientização sobre a responsabilidade ambiental.

PALAVRAS-CHAVE: Interação comunitária. Gestão de resíduos. Sustentabilidade urbana**.**

Sustainable transformation: composting and social technology in a low-income condominium with the participation of researchers and residents

ABSTRACT

The objective of the research was to apply composting techniques and social technology to treat food waste in a low -income condominium in southern Brazil, with the joint participation of university researchers and residents. The purpose was not only to reduce the environmental impact caused by waste, but also generate organic compounds of environmental and agronomic value. The project started with an observational visit to the condominium to identify appropriate spaces for the execution of the work. Then the researchers promoted the project through posters and direct conversations with the residents. After this interaction, training workshops were held for participating residents, totaling 40 families and 122 people. The workshops addressed topics such as the impacts of food waste, segregation at source, the composting process and social technology. Educational materials were distributed to assist in the learning process, and visual resources, such as workshops and educational videos, were used. Finally, the composting process was implemented. Social technology played a significant role throughout the process. During workshops and interactions with residents, participants became active learning agents, sharing traditional knowledge and integrating them with scientific knowledge. Educational materials have represented an important tool for social technology, providing information in an accessible and motivational way. The active participation of researchers and residents was also a positive aspect of this investigation, as it strengthened the condominium community, created social bonds and promoted awareness of environmental responsibility.

Keywords: Community interaction. Waste management. Urban sustainability.

Transformación sostenible: compostaje y tecnología social en un condominio de bajos ingresos con la participación de investigadores y residents

RESUMEN

El objetivo de la investigación fue aplicar técnicas de compostaje y tecnología social para tratar los residuos

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alimentarios en un condominio de bajos ingresos en el sur de Brasil, con la participación conjunta de investigadores universitarios y residentes. El propósito no era solo reducir el impacto ambiental causado por los residuos, sino también generar compost orgánico con valor ambiental y agronómico. El proyecto comenzó con una visita observacional al condominio para identificar espacios adecuados para la implementación del trabajo. Posteriormente, los investigadores promovieron el proyecto mediante carteles y conversaciones directas con los residentes. Tras esta interacción, se llevaron a cabo talleres de capacitación para los residentes participantes, involucrando a 40 familias y un total de 122 personas. Los talleres abordaron temas como los impactos del desperdicio de alimentos, la segregación en la fuente, el proceso de compostaje y la tecnología social. Se distribuyeron materiales educativos para apoyar el proceso de aprendizaje, y se utilizaron recursos visuales, como talleres y videos educativos. Finalmente, se implementó el proceso de compostaje. La tecnología social jugó un papel significativo a lo largo de todo el proceso. Durante los talleres e interacciones con los residentes, los participantes se convirtieron en agentes activos de aprendizaje, compartiendo conocimientos tradicionales e integrándolos con el conocimiento científico. Los materiales educativos representaron una herramienta importante de tecnología social, proporcionando información de manera accesible y motivadora. La participación activa de los investigadores y residentes fue también un aspecto positivo de esta investigación, ya que fortaleció la comunidad del condominio, creó vínculos sociales y promovió la conciencia sobre la responsabilidad ambiental.

PALABRAS CLAVE: Interacción comunitaria. Gestión de residuos. Sostenibilidad urbana.

GRAPHICAL ABSTRACT

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1 INTRODUCTION

O In urban regions, solid waste generation is a growing challenge worldwide, driven by rapid population growth, urbanization, and rising consumption patterns associated with economic development. This accelerated increase in solid waste in urban areas has generated negative and significant damage to the sustainability of cities, public health, economic, social and environmental issues (SINGH; SINGH, 2022).

In urban regions, the most predominant solid waste includes organic materials, metals, glass, paper, cardboard, and plastics, with a small portion of this waste represented by ash (SHIFERAW et al., 2023).

On a global scale, organic matter and especially food matter contributes the largest proportion of Municipal Solid Waste (MSW), accounting for 44% of global waste, followed by plastic, glass, cardboard and paper waste (38%), and 18% of other materials (YATOO et al., 2024). Of this organic waste, a significant percentage is made up of food waste generated in houses, apartments, hotels, restaurants, canteens, schools, universities, and others (MUSICUS et al. 2022)

Despite this amount, only 1.6% of the organic waste generated is properly treated, either by composting, vermicomposting, or anaerobic digestion (LIEW et al. 2022). When left untreated, this waste is disposed of improperly, usually in open dumps or landfills. The latter results in increased management costs and wasted resources (ANAND et al., 2021).

Analyzing another scenario, the population increase in urban centers is associated with the migration of people from rural areas to cities, often in search of better living conditions (LIU et al. 2021). This has led to the increasing construction of low-income condominiums, preferably in peripheral neighborhoods, which lack waste collection systems and basic sanitation infrastructure, making the community that lives in these neighborhoods vulnerable (ANAND; PHULEIRA, 2020).

In Brazil, in March 2009, the federal government started the Minha Casa Minha Vida program, a housing initiative for vulnerable people who do not have the financial conditions to buy a property. This program offers reduced interest rates and subsidies to help people in situations of housing vulnerability, with a gross income of up to two minimum wages (approximately R$ 600.00), to acquire their own home, both in urban and rural areas. According to data from the Brazilian government, approximately seven million housing units were delivered between 2009 and 2023 (FERREIRA et al., 2021).

These housing units are low-income vertical condominiums located far from urban centers and house many residents in each space. One of the biggest challenges in these condominiums is to correctly handle the waste generated in their apartments, making this process challenging (SHIFERAW et al., 2023). This initiative by the Brazilian government can serve as a model for implementation in other countries, offering affordable housing for low-income people and helping to reduce housing vulnerability in several regions (Ferreira et al. 2021).

The public collection service in the regions where these condominiums are located is largely insufficient, with only conventional collection, where waste is collected without segregation (MARTINHO et al., 2022). This insufficiency in public collection is associated with the

lack of prioritization in the implementation of waste management systems by municipal governments, compromising the search for sustainable management (SHIFERAW et al., 2023). This is often due to financial constraints, little/lack of knowledge, little political will, as well as deficiencies in the design and execution of effective plans (TESHOME, 2021).

According to Kundo et al. (2023), the disposal of organic waste not only causes economic impacts, but also environmental and social damage, such as the generation of greenhouse gases, including methane and carbon dioxide, in addition to the contamination of soil and water bodies by leachate, a viscous liquid generated in the degradation of organic waste.

The incineration of this waste releases highly harmful gases, contributing to air pollution (HWANG et al. 2017). Regarding social damage, these wastes attract vectors that cause diseases, causing public health problems. In addition, the disposal of this waste in urban areas causes aesthetic problems, reducing the quality and harmonization of the city, which can harm tourism depending on the city (KUNDO et al., 2023).

In Brazil, the National Solid Waste Policy (PNRS), established by Law 12.305/2010, indicates composting as one of the technologies for the environmentally correct final disposal of organic waste (BRASIL, 2010).

Composting is defined as a biotechnological process that involves the degradation of organic waste by microorganisms such as bacteria and fungi, it is presented as a highly effective, low-cost, and short-time solution to mitigate the negative impacts organic waste causes on the environment (OLđVERđ et al., 2023).

At the end of the composting process, an organic fertilizer rich in nutrients is generated, which can have numerous uses within a condominium, such as: in urban gardens and in the cultivation of ornamental plants for landscaping (SMALL et al., 2023).

However, it is necessary to involve the entire community where the work is inserted in all stages of the composting process, including the segregation and assembly of composters. Within this set, another technique stands out that aims to unify professional knowledge with popular knowledge, resulting in a joint work, which is social technology (ROSA et al., 2021).

According to the Institute of Social Technology - ITS (2004), ST is a set of transformative techniques and methodologies developed and/or applied in the interaction with a vulnerable community, which represent solutions for the social inclusion of this population in improving the quality of life. The unification of these two techniques – composting and ST – in the treatment of organic waste emerges as an ally, especially in the safety of public health and the environment.

Working with composting together with social technology can offer a solution to organic waste, in addition to promoting environmental education and community engagement in the search for sustainable solutions and practices to improve living conditions in these communities (MACIEL et al., 2022).

The hypothesis of this work is based on the combination of composting techniques and social technology, where both present promising strategies in facing challenges, actively involving the community in the design and implementation of the process. By promoting the participation of the community where these techniques are inserted, social technology not only facilitates the appropriation of technology, but also fosters changes in behavior and practices that contribute to social and environmental sustainability (ROSA et al., 2021).

By aligning composting and social technology, it is possible to contribute to four of the 17 UN Sustainable Development Goals (SDGs). The eradication of poverty (SDG 1) is promoted through knowledge and leisure. The Zero Hunger and Sustainable Agriculture goal (SDG 2) ensures food security through sustainable agriculture. Reducing inequality (SDG 10) is achieved with equality in all spheres. Sustainable communities (SDG 11) are ensured with inclusive cities and proper waste management. Responsible consumption and production (SDG 12) are promoted by public institutions, ensuring sustainable practices (UN, 2015).

In addition, the involvement of universities in social technology projects can strengthen these initiatives, connecting academia to social demands and promoting a collaborative approach to addressing the challenges of urban solid waste (ROSA et al., 2021). Given the above, the objective of this work was to apply the composting process to treat organic waste generated in a low -income condominium and, in parallel, to use the social technology technique together with the researchers and condominium residents as a learning tool.

2 METHODOLOGY

The work was characterized as descriptive and extension research. According to Siedlecki (2020), descriptive research aims to report the experiences and activities developed in a particular study. Extension research aims to promote interaction between the university and the community, developing improvement measures through the implementation of technologies (ROSS, 2015).

2.1 Study site

The study was conducted in a residential condominium in the city of Pelotas, Brazil, as shown in Figure 1. This condominium is part of the Minha Casa Minha Vida (MCMV) program, considered low-income.

The choice of the location for the execution of the project was based on a region where 60% of the population received some type of government aid. Among the priority areas for execution were a condominium and a municipal school. The choice for the condominium was motivated by two factors: firstly, because it was a place that contemplated a greater number of people benefited by government actions, and secondly, because the school already developed social work on its premises.

The condominium consists of 12 blocks, totaling 180 apartments, in addition to a living room and a sports court, housing approximately 600 residents. To carry out the research, the manager talked to the researchers, passing on relevant information for the development of the project

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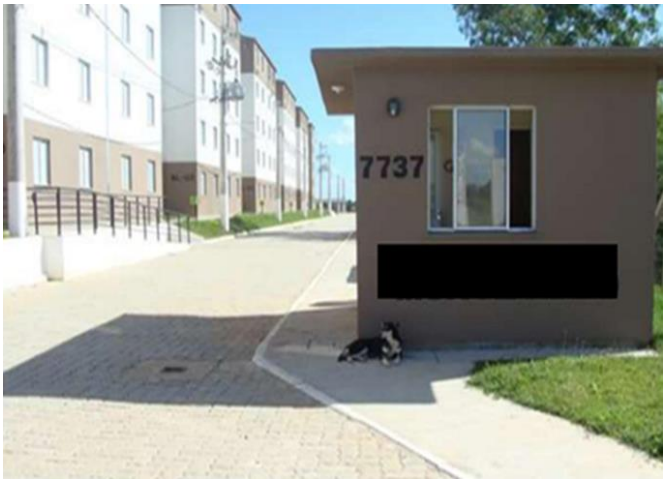
Figure 1 - Entrance to the condominium



Source: Authors (2024)

Researchers from the Federal University of Pelotas were involved in all stages of the project, which were divided into six distinct parts. The observation visit, dissemination of the project, talks with residents and the training workshop followed the methodology of Lemos and Dechandt (2019) and Rosa et al. (2021), with adaptations.

2.2 Observation visit

After the authorization of the manager, an observation visit was carried out. This stage aimed to get to know the condominium and identify the most suitable place to carry out the composting experiment. During the visit, it was verified whether garbage cans were available on the premises of the condominium for the packaging of waste.

2.3 Publicizing the project and talking to residents

Posters were made on A4 sheets that presented the theme of the project. The posters were distributed in all blocks of the condominium to reach as many residents as possible (Figure 2A). Contact was initiated with the residents, and each apartment was visited individually. The researchers were duly identified by badges and uniforms. During the conversation, they explained the project, seeking to identify families interested in participating (Figure 2B).

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Figure 2 - Publicizing the project (A); talking to residents (B)

Source: Authors (2024)

2.4 Training workshop

The workshop was divided into two phases. In the first, a presentation of the project was held explaining all the themes, such as the segregation of waste directly at the source of generation and the impacts that this waste causes in the environment. In the second phase, the types of organic waste treatment were addressed, with emphasis on the composting process, the benefits of organic compost, as well as the functioning of social technology and the importance of the participation of residents in all stages of the project.

During the workshop, educational booklets were made available to the residents that helped in the learning process, as well as visual resources, such as PowerPoint presentations, which were projected along with educational videos.

2.5 Composting process

This stage involved the assembly of four composters in 310-liter polyethylene reactors (Figure 3A), with the following dimensions: height of 0.54m; base diameter of 0.75m and upper end diameter of 1.04m. Before supplying the composters with food waste, the volume of waste generated per day in each apartment of the participating residents was quantified over the course of a week (PEINEMANN; PLEISSNER, 2017).

Quantification was carried out by weighing on a digital scale, where, for one week, the food waste of each participating family was weighed and recorded. An average of 1 kg of food waste per day was found in each apartment. The supply of composters was continuous, that is, every day the residents deposited food waste in them (Figure 3B). Rice husk was used as a structuring material (GUIDONI et al., 2021). In this stage, the participants performed the tasks as learned during the workshop, following the guidelines of the booklet.

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In addition, for the correct segregation of waste between organic and inorganic, plastic buckets (Figure 3C) were made available for the storage of food waste before it was deposited in the composters, as well as protective gloves and shovels for the residue turnover. The number of reactors and their volumes were determined based on the number of participating households and the amount of waste generated daily (GIUDICIANNI et al., 2015). After the installation of the composters, the temperature was measured throughout the process and the waste was homogenized once a week until the process was completed (GUIDONI et al., 2021).

Figure 3 – Compost bins (A); Filling the bins (B); Segregation buckets (C)

Source: Authors (2024)

2.6 Resident evaluation

The last stage of the project was an evaluation of the residents in relation to the project. Behind each booklet, a space was made available for residents to describe their opinions, criticisms and suggestions for improvements to the project. At the end of the project, they delivered this part of the booklet. At the last meeting, the points raised by the residents were discussed.

3 RESULTS AND DISCUSSION

The results of this work will be presented according to the chronology of the stages carried out.

3.1 Solid waste collection in the condominium

As reported by the manager, waste collection follows the conventional pattern, where residents deposit their waste in the front of the condominium, sharing an area with another neighboring condominium. However, the availability of only one large trash can shows the insufficiency of space for the proper storage of waste. In addition, it is noted that waste is deposited in a mixed way, without correct segregation (WOJNOWSKA-BARYłA et al., 2022).

3.2 Observation tour

During the visit, it was noted that the external space of the condominium could accommodate the installation of composters. In addition, the lack of trash cans inside the condominium was observed, which contributed to the accumulation of waste in the external area. This situation resulted in a series of problems for residents, including unpleasant odors, obstruction of the sewer network, and the proliferation of disease-transmitting agents (KRYSTOSIK et al., 2020).

According to Alomar (2019), 82.5% of the condominiums of the Minha Casa Minha Vida program built in the state of Santa Catarina, Brazil, are vertical and located in peripheral regions. In Pelotas, data from the city hall indicate that, in 2023, about 250 of these houses were approved in the north of the city, intended for needy families with an income of up to two minimum wages (PELOTAS, 2023). The neighborhoods where these condominiums are built are served only by conventional collection, which shows poor waste management and waste of resources, increasing the costs for the city in sending waste to the landfill (BUENROSTRO et al., 2008).

Solid waste management is not limited to collection, but also to other steps, such as segregation at source, transportation, transfer site, recycling, treatment, and disposal of waste in landfills. All these steps are important to minimize damage to the environment and improve people's quality of life (KUMAR et al., 2017).

3.3 Talking to residents

During the visit to the apartments, the residents were receptive and interested in the project. However, of the 600 residents, only 40 families, constituting a total of 122, people initially showed interest in participating. The reasons for this reduced number of participants are varied, as reported by the residents themselves, including work schedules, study, and lack of interest, although they are not opposed to carrying out the project in the condominium.

In conversation with residents, they suggested holding biweekly meetings to clarify doubts about the execution of the project and create strategies to involve more residents. The meetings took place on Saturday afternoons, in the condominium's living space. One of the key aspects highlighted in these meetings was the importance of listening to residents and understanding their daily realities and challenges. According to Willis et al. (2020), many of these individuals have low educational levels, face difficulties related to unemployment, and deal with significant financial constraints. However, they joined the project because they understood that it would represent an improvement for the environment where they live with their families.

One of the residents reported that she believed that the project would contribute to improving the aesthetics of the condominium and reduce the presence of insects and unpleasant odors. The interest shown by the families who accepted to participate in the project was remarkable and exceeded expectations.

This scenario contrasts with the experience described in the study by Souza and Drummond (2023), who conducted a community composting project in a condominium. During conversations with residents, the perpetrators encountered great resistance. Many disagreed with the initiative, claiming that preparing the space in the condominium for composting would be too expensive. In addition, there was a perception that composting could devalue the condominium and that the responsibility for the initiative should be attributed to the municipal government.

When asked at the first meeting about the segregation of waste in their apartments, most residents answered that they did not carry it out. Those who answered affirmatively reported that, even when segregating, the waste was mixed during collection. This is attributed to the lack of selective collection in the condominium, the lack of awareness about the importance of segregation, and the neglect of environmental issues (LATTANZIO et al., 2022).

These results are like those of Bantigegn et al. (2020), who conducted a study in the city of Debre Markos, India. In this study, the residents of a condominium also did not segregate their waste, which was deposited on public roads. The condominium's waste collection system is not adequate to the needs of residents, making it crucial to implement practices and strategies in collaboration with educational institutions, government institutions and the local community to ensure correct waste management in areas where collection is precarious and insufficient (ISMAIL; HANAFIAH, 2020).

Thus, the participation of residents in projects aimed at minimizing impacts and promoting improvements is essential, as they play an important role in disseminating the results of these projects. After all, it is the residents who are most affected by the improper disposal of waste (ALI; SION, 2014).

3.4 Training workshop

An effective tool in the construction of knowledge and exchange of experiences between residents and researchers was the workshop given to residents. The application of social technology in the workshop made the residents active agents of learning. This exchange of knowledge and the dissemination of scientific and popular knowledge transform the relationship between researchers and residents (LEMOS; DECHANDT, 2019; ROSA et al., 2021).

The booklets were prepared with educational content in simple language and attractive layout, obtaining significant results by contributing to the learning about the stages of the work (LIAO; LI, 2019). Along with the booklets, other materials and websites on the subject were made available for further study. A similar result was found in the work of Silva et al. (2023), who developed educational booklets on health services and fall prevention. The authors highlight that the booklets were fundamental to providing information and knowledge to people of different age groups.

3.5 Composting process

Each of the 40 families involved in the work produced an average of 1 kg of food waste daily, totaling 1,200 kg per month. The filling of the composters was completed in 60 days,

considering the amount of waste generated in the apartments by the residents. Residents deposited their food waste daily in the composters. Twice a week, a resident oversaw adding the structuring material and homogenizing it. After the composters were filled, the composting process in the condominium lasted 90 days.

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3.6 Organic compost, condominiums and the Sustainable Development Goals

This compost can be used in organic gardens or landscaping, in the cultivation of plants for the beautification of the condominium (SHELTON et al., 2022).

According to the work of Brantsæter et al. (2017), the consumption of food from organic gardens enables a healthy diet, since these foods are free of pesticides. In addition, according to Macie et al. (2020), organic gardens in communities are pedagogical tools that encourage the consumption of healthy foods, improving the quality of health and life.

In the United Kingdom, a third of condominiums with gardens compost the waste generated in the apartments, using organic compost for garden maintenance (SHELTON et al., 2022). In Brazil, few cities adopt composting to treat food waste generated in condominiums; these cities are in the state of São Paulo (SOUZA and DRUMOND, 2023).

The UN Sustainable Development Goals (SDGs), especially SDG 2 and SDG 12, contextualize the production of organic compost discussed in this work. Target 2.4 of SDG 2 highlights the importance of ensuring sustainable food production systems that increase productivity and help maintain ecosystems. Target 12.5 of SDG 12 establishes that, by 2030, it is necessary to reduce, prevent, recycle, reuse and treat solid waste (UN, 2015).

3.7 Residents, the composting process and social technology

The availability of space in the condominium and, especially, the willingness of residents to add this practice to their routine, made the installation of composters possible. Composting assigns responsibilities to residents in relation to the waste generated in their apartments. In addition, the residents agreed, in one of the meetings, that the work went far beyond the composting process, integrating the condominium community through the social and environmental benefits it provided (LEMOS et al., 2019).

As reported by one of the residents, the work helped to meet other residents and share experiences. Another positive result was the increased interest of other residents in participating, requiring the distribution of more waste segregation containers, such as for three families in Block 12, apartments 240, 247 and 248, and two families in Block 10, apartments 438 and 440.

Social technology provided a continuous exchange of experiences between researchers and residents. Works that apply social technology focus mainly on solving problems faced by underserved communities, who often lack opportunities for improvement in their neighborhoods, resulting in changes in behavior, attitudes, and solutions that drive social transformation (DAGNINO, 2009).

Social technology within the condominium formed social networks through the empowerment of residents, who shared their knowledge with others, attracting new

participants. Social technology, when applied, promotes new experiences that can be reapplied and adapted according to needs, including other communities (FRESSOLI; DIAS, 2014; ROSA et al., 2021).

Regarding social technology and the composting process, it can be said that the union of these techniques is contributing to achieving target 8.4 of SDG 8. This goal aims, by the year 2030, to improve the global efficiency of resources in production and consumption, decoupling economic growth from environmental degradation. This is promoted through Sustainable Production and Consumption programs, aiming to foster a more sustainable economic model, preserving natural resources and reducing environmental impact (UN, 2015).

3.8 Residents' perception of the project

At the end of the project, residents were given the opportunity to report their experiences, criticisms and suggestions. They could do this on the back of the primers, which contained a blank space for this purpose. The residents showed great satisfaction and satisfaction, assuring that they would continue to use the composters.

During the last meeting, one of the residents suggested using compost for planting plants in order to beautify the condominium. There were suggestions for the University not only to continue with the project, but to expand it to other needy areas of the condominium. Another suggestion was to bring educational activities to the children, since the condominium lacks adequate leisure areas for them. These educational activities would play a crucial role in cultivating a sense of responsibility in children regarding the importance of waste management and treatment not only within their immediate surroundings, but for the well-being of the entire community (MACIEL et al., 2022).

The main criticism was about the lack of participation of all residents and the importance of creating strategies to involve more residents. An effective strategy would be to share with the other residents the positive results achieved, such as the significant reduction in the disposal of food waste at the collection point. This would not only result in a decrease in insects and unpleasant odors but would also highlight the knowledge acquired throughout the implementation of the project (DALLAIRE-LAMONTAGNE et al., 2024). In addition, the production of organic compost would be highlighted as a useful product that can be used within the condominium, bringing tangible benefits to all residents (SOUZA; DRUMMOND, 2023).

Residents understood that the project promoted inclusion, giving them decision-making power and strengthening the community. One resident reported having noticed the interest and curiosity of other residents, who later joined and participated in the project. This testimony highlights the project's ability to engage and inspire other community members, creating a sense of collaboration (KUMAR et al., 2017).

The results at all stages of the project are attributed to the active participation of the residents and the collaboration of the university, who worked to achieve SDG 10, especially target 10.2, which promotes social inclusion, regardless of characteristics such as age, gender, disability, race, ethnicity, origin, religion or economic status, as well as target 10.3, which seeks to guarantee equal opportunities and reduce inequalities (UN, 2015).

4 CONCLUSION

This work demonstrated the effectiveness and relevance of sustainable practices in food waste management in a residential condominium. Despite the challenges faced in involving residents, the results highlight the importance of environmental awareness and the use of social technologies as effective strategies for promoting sustainability in urban environments.

The active participation of researchers played a significant role in guiding, implementing and monitoring the project, highlighting the transformative potential of universities in promoting sustainable practices in society. The synergy between residents and researchers was essential in strengthening communities, creating social bonds and fostering a culture of environmental responsibility. Thus, composting proved to be not only an environmentally friendly solution for managing food waste, but also an opportunity to strengthen community ties by providing high-quality compost that can be used within the condominium.

It is therefore crucial to continue investing in social technology initiatives and partnerships between universities and communities to build more sustainable and resilient urban environments for present and future generations.

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Declaration of Conflicts of Interest

We, Liciane Oliveira da Rosa, Tatiana Porto de Souza, Luciara Bilhalva Corrêa, Álvaro Renato Guerra Dias and Érico Kunde Corrêa, declare that there are no conflicts of interest related to the manuscript entitled “Sustainable transformation: composting and social technology in a low-income condominium with the participation of researchers and residents”.

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