SURVEY OF ENVIRONMENTAL EDUCATION ACTIONS IN SOLID WASTE IN THE STATE OF MATO GROSSO DO SUL

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ABSTRACT

This study encompasses the survey of environmental education actions focused on themes related to solid waste in the 79 municipalities of Mato Grosso do Sul, considering the implementation of policies by the National Solid Waste Policy (NSWP) and the Sustainable Development Goals. (ODS). With data from 2019 and 2020, provided by the Ecological ICMS and the State System of Environmental Education Information (SISEA), the research aims to diagnose the gaps and successes of waste management practices in the state. The methodology involved the documentary analysis of data on selective collection infrastructure, awareness campaigns, and environmental education programs in each municipality. The results revealed that 33 municipalities (41.8%) did not present effective environmental education actions. In contrast, cities like Campo Grande, Amambai, Maracaju, and Taquarussu stand out for their structured selective collection, presence of voluntary delivery points (VDP), and especially for their continued environmental education that reach different target audiences, involving various social groups in sustainable practices and the formation of sustainable citizens. The study points out that the lack of actions in municipalities with large populations, such as Anastácio and Ribas do Rio Pardo, exacerbates environmental and public health problems, due to the irregular disposal of waste, which contributes to the emergence of small dumps along roadsides and riparian forests. The absence of these initiatives limits sustainable development and the achievement of the SDG targets, such as SDG 11 (Sustainable Cities and Communities) and SDG 12 (Responsible Consumption and Production). The results of this evaluation emphasize the need to expand technical and financial support policies for municipalities with less activity, encouraging partnerships and strengthening solid waste management infrastructure. It is suggested that the state government create incentive and training programs to expand environmental education, consolidating Mato Grosso do Sul as a model of ecological responsibility and alignment with the SDGs.

Keywords: Ecological ICMS, National Solid Waste Policy (PNRS), Sustainable Development Goals (SDGs), Reverse Logistics.

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INTRODUCTION

The National Solid Waste Policy (PNRS- Law 12.305, of August 2, 2010) establishes guidelines for the management, treatment, and final disposal of solid waste. The PNRS requires the development of State and Municipal Solid Waste Plans that include, among other aspects, a detailed diagnosis of the solid waste situation in states and municipalities, as well as goals and programs to reduce, reuse, and recycle waste. The law also proposes the establishment of inter-municipal consortia for the integrated management of solid waste and the promotion of continuous environmental education actions, consolidating shared responsibility among government spheres, producers, distributors, merchants, and consumers. The regulation of reverse logistics, including all sectors in sustainable management, and mitigating environmental impacts are central parts of this policy.

Given this necessity, assessing the situation in the state of Mato Grosso do Sul and its municipalities regarding solid waste disposal, implementation of reverse logistics and selective collection, and the stage of environmental education actions is essential. This analysis allows for the identification of gaps and challenges, serving as a basis for proposals that seek to align the state with the objectives established by the NSWP and, at the same time, contribute to the Sustainable Development Goals (SDGs), particularly SDGs 11, 12, and 13, focused on sustainable communities, responsible consumption, and climate action.

In response to these demands, the State University of Mato Grosso do Sul (UEMS) and the State Public Prosecutor's Office of Mato Grosso do Sul (MPMS) signed a Technical and Scientific Cooperation Agreement. This agreement aims to support the project "Solid Waste Management with a Focus on Policies and Guidelines for Reverse Logistics and Environmental Education." One of the project's objectives is to outline a diagnosis of existing environmental education actions on solid waste in the municipalities of Mato Grosso do Sul, to inform public policies and improve local environmental governance.

This study analyzes environmental education actions on solid waste across seventy-nine (79) municipalities in the state of Mato Grosso do Sul, in a collaborative effort between the MPMS, the UEMS, the State Court of Auditors of Mato Grosso do Sul (TCA-MS), and the Mato Grosso do Sul Environmental Institute (IMASUL). Using data from the Ecological ICMS and the State Environmental Education Information System (SEEIS) for 2019 and 2020, the study provides an overview of waste management in the state, highlighting both progress and gaps in environmental education programs.

QUANTITATIVE AND IMPACT ANALYSIS

Of the seventy-nine (79) municipalities evaluated, thirty-three (41.8%) do not have records of environmental education actions aimed at solid waste management. When looking for unregistered actions, some municipalities revealed an increase in municipalities active in environmental education for solid waste. Even so, the lack of educational, awareness, and environmental consciousness initiatives directly impacts public health, increases the incidence of improper waste disposal and contributes to environmental problems such as the contamination of water resources and the proliferation of vector-borne diseases.

HIGHLIGHTS AND BEST PRACTICES

The municipalities of Campo Grande, Amambai, Macaraju, and Taquarussu emerge as success stories, showcasing a wide diversity and positive impact in their environmental education actions. These cities are more organized in terms of integrated solid waste management, working on the segregation and environmentally correct final disposal of rejects, recyclables, healthcare service waste, electronic waste, and some other waste subject to reverse logistics. Campo Grande, specifically, has eco-points spread across various regions, facilitating the correct disposal of recyclable waste, construction waste, green waste, bulky waste, and electronic waste by the population. The city also invests in popular initiatives and educational programs, such as contests and actions in all public schools in the city. These actions highlight the positive impact of a selective collection infrastructure combined with an active educational environment, especially in large urban centers, aligning with SDG 11 (Sustainable Cities and Communities) and SDG 12 (Responsible Consumption and Production). Amambai and Maracaju demonstrate in practice that the professionalization of waste picker organizations helps improve the management of urban solid waste but increases the adherence to selective collection and the recovery rate of recyclable waste. The environmental education actions carried out by waste pickers have a greater socio-environmental impact on the population, as the narrative comes from people who form their monthly family income from our conscious disposal.

MUNICIPALITIES WITH SIGNIFICANT CHALLENGES

On the other hand, municipalities like Anastácio, Bela Vista, and Ribas do Rio Pardo reveal a concerning absence of recorded actions, which accentuates challenges related to improper waste disposal and lack of environmental awareness. Not to mention that there are municipalities that still have no initiatives for selective collection and send their mixed waste to dumps or landfills. The municipalities that carry out few actions generally have few agents responsible for environmental education, usually concentrated in one or two people from the environmental department and the

education department. This neglect of environmental education, which loses strength in the face of other municipal activities, represents a significant gap for the state, as structuring solid waste management and holding the population accountable does not always have an immediate effect. It is necessary to teach the population to change their consumption and disposal habits (as advocated by SDG 12), showing the new noble paths that the municipality's waste will take if everyone plays their part. So, the lack of investment in environmental education leads to an increase in illegal dumping in the city, as well as cases of air, soil, and water pollution due to waste being discarded in inappropriate places.

ENVIRONMENTAL EDUCATION AND THE ROLE OF SCHOOLS

The analysis also reinforces that the involvement of young people and children through school activities is crucial for the development of a culture of sustainability and socio-environmental change. However, focusing solely on the school audience does not promote the necessary changes. It is necessary to invest in the entire school community, including the students' families, adults and school staff. Municipalities like Batayporã, Chapadão do Sul, Taquarussu and Iguatemi that integrate environmental education into the school curriculum with lectures, recycling competitions, cleanup drives, and waste collection projects contribute to the formation of young people who are aware and engaged in environmental protection. Investing in the education of citizens who are active in environmental protection helps municipalities achieve the SDGs and build a more sustainable environment.

RECOMMENDATIONS FOR PUBLIC POLICIES

Based on this diagnosis, there is a need to expand environmental education actions on solid waste in municipalities with less activity, prioritizing an integrated approach with the support of the state government and public-private partnerships. The creation of state incentive policies, especially aimed at smaller municipalities with limited resources, could reduce disparities in solid waste management in the state, promoting greater equity and sustainability. The importance of training environmental educators is reinforced so that each one can teach about selective disposal, selective collection, recycling, and hazardous waste within their network, whether in a school, a municipal department, a commercial establishment, a restaurant, an industry, a religious space, etc. To advance the SDGs and fulfill the commitments of the NSWP, it is recommended that the academic community expand research in environmental education focused on waste management, consolidating Mato Grosso do Sul as a model of socio-environmental responsibility. With the dissemination of results in the scientific sphere, the state is expected to inspire informed public policies, with a lasting impact on sustainable development.

REFERENCES

Brazil. (2010, August 2). Law No. 12,305, of August 2, 2010. Establishes the National Solid Waste Policy; amends Law No. 9,605, of February 12, 1998; and other provisions. Diário Oficial da União: Brasília, DF. Available at: https://www.planalto.gov.br/ccivil_03/_ato2007-2010/2010/lei/l12305.htm. Accessed on: November 12, 2024.

Mato Grosso do Sul. (1991, January 4). Supplementary Law No. 57, of January 4, 1991. Provides for the Ecological ICMS and establishes criteria for the distribution of the share of ICMS revenue among municipalities. Diário Oficial do Estado: Campo Grande, MS. Available at: https://www.imasul.ms.gov.br/setores/gerencias/unidades-de-conservacao/icms-ecologico/. Accessed on: November 13, 2024.

United Nations (UN). (2015, September 25). Transforming Our World: The 2030 Agenda for Sustainable Development. Resolution A/RES/70/1, adopted by the United Nations General Assembly. Available at: https://brasil.un.org/pt-br/sdgs. Accessed on: November 13, 2024.