Sustainability indicators for municipalities in the ABC Paulista region: are they meeting the sustainable development goals?

Indicadores de sustentabilidade nos municípios do ABC Paulista: em cumprimento aos objetivos de desenvolvimento sustentável?

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Resumo
Este artigo apresenta estudo sobre os Objetivos de Desenvolvimento Sustentável (ODS), no cumprimento das metas da Agenda 2030 da Organização das Nações Unidas (ONU) e como estão sendo cumpridos nos municípios da Região do ABC Paulista. Objetivou-se comparar a situação dos municípios a partir de dois indicadores de sustentabilidade: o Índice de Desenvolvimento Sustentável das Cidades – Brasil (IDSC-BR) e Objetivos de Desenvolvimento Sustentável – Brasil (ODS-BR). A metodologia envolve o levantamento em dados secundários, dos indicadores supracitados nas sete cidades que compõem essa região. Na análise, faz-se a comparação da situação de cada município em relação a cada ODS e em relação aos demais municípios da região. Os resultados permitem afirmar que, independentemente da origem das matrizes, há um alinhamento, entre os municípios, no que se refere aos avanços em relação aos ODS, às demandas ambientais, aos fatores, aos atributos e aos indicadores de desempenho dos ODS das sete cidades.
Palavras-chave: Objetivos de Desenvolvimento Sustentável. Indicadores municipais de sustentabilidade. Região do ABC Paulista.

Abstract
This article presents a study on the Sustainable Development Goals (SDGs), the fulfillment of the Goals of the 2030 Agenda of the United Nations (UN) and how they are being fulfilled in the seven municipalities of the ABC Paulista Region. The aim was to compare the situation of the municipalities using two sustainability indicators: the Sustainable Development Index for Cities - Brazil (IDSC-BR) and the Sustainable Development Goals - Brazil (SDG-BR). The methodology involves collecting secondary data on the IDSC-BR and SDG-BR sustainability indicators from the seven cities that make up this region. The analysis compares the situation of each municipality in relation to each SDG and in relation to the other municipalities in the region. The results show that, regardless of the origin of the matrices, there is an alignment between the municipalities in terms of progress in relation to the SDGs, environmental demands, factors, attributes and performance indicators of the SDGs of the seven cities.
Keywords: Sustainable Development Goals. Municipal sustainability indicators. ABC Paulista Region.

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1 Introduction

Sustainability occurs when the responsible use of social, environmental, and economic development resources is observed, taking into account generational preservation in their utilization (Vieira, 2019). Thus, it involves multiple dimensions beyond those mentioned above, namely, institutional, ethical, and collaborative aspects, with repercussions for daily well-being that are inseparable from implications for urban life and the management of these processes (Phillip Jr. & Bruna, 2019; Vieira, 2019).

Discussions related to sustainability management have been addressed in United Nations global conferences, such as: the United Nations Conference on the Human Environment (Stockholm, 1972); the United Nations Conference on Environment and Development and the Earth Summit (Rio de Janeiro, 1992); the Conference of the Parties to the United Nations Framework Convention on Climate Change (Kyoto, 1997); the United Nations Conference on Sustainable Development – Rio+20 (Rio de Janeiro, 2012); the Conference of the Parties to the United Nations Framework Convention on Climate Change (Paris, 2015), among other examples (Oliveira, 2019).

The document titled *Our Common Future*, elaborated in the Brundtland Report developed in 1987 by the World Commission on Environment and Development (WCED) of the United Nations (UN), established the concept of sustainable development by emphasizing generational protection of present and future needs through the responsible use of technologies, social organization, environmental resource use, and biosphere protection (UN, 1987). The Brundtland Report (UN, 1987) reinforced the environmental agenda as a central issue in international governance, grounded in the necessary impact and interrelation between local, global, and regional spheres, by highlighting the interdependence of ecological, cultural, heritage, and economic matters (Oliveira, 2019).

The UN's 2030 Agenda (2015) outlines the guidelines for advancing the dimensions of sustainability. Accordingly, to fulfill this Universal Agenda, 17 Sustainable Development Goals (SDGs) were established, to be implemented through 169 targets as a means of realizing fundamental human rights for present and future generations. With global repercussions and impacts on the world population, achieving the predetermined targets requires urgent, collective, and collaborative efforts, with progress to be analyzed at both macro and micro levels, including their effects on territorial dynamics.

To fulfill the targets set by the SDGs, actions are undertaken at the municipal level, and their efficiency is assessed through municipal indicators. These indicators serve as a relevant tool for urban management planning and monitoring. They make it possible to measure and evaluate whether public policies are being properly implemented, support decision-making processes, allow for the dissemination of results, and enable comparisons with other municipalities. This makes them significant for analyzing regional development in line with the SDG targets (Sarubbi & Moraes, 2019).

In this regard, Dunder and Araújo (2020), in their research on regional development, examined the correspondences between the actions of the Participatory Regional Multi-Year Plan of the ABC Paulista Region and the fulfillment of the SDGs. They adopted a comparative analysis between the multi-year plan and the 2030 Agenda and observed satisfactory results demonstrating regional development aligned with global development goals.

The 2030 Agenda entails significant changes throughout this decade concerning the foundational dimensions of a more sustainable form of development, with repercussions for the entire global population. Therefore, studies that map how the SDGs are being implemented, what advances have been made, and what challenges remain in ensuring human rights and quality of life for all in a universal manner are of great relevance.

This study aims to compare municipal progress regarding the SDGs using two relevant sustainability indices: the Sustainable City Development Index – Brazil (IDSC-BR) and the Sustainable Development Goals – Brazil (SDG-BR), focusing on the ABC Paulista Region, which comprises the following municipalities: Santo André, São Bernardo do Campo, São Caetano do Sul, Diadema, Mauá, Ribeirão Pires, and Rio Grande da Serra.

This research is justified by the scarcity of publications that comparatively analyze, based on sustainability indicators, the progress in fulfilling municipal SDGs, especially within the specified region. By presenting illustrative studies on the topic, it is expected that this work will contribute to the advancement of scientific knowledge concerning the urgent issue of "Sustainable Development" at the regional level, and also support public managers in this region in identifying gaps and opportunities for the effective implementation of the SDGs and the fulfillment of the 2030 Agenda. The article proceeds with the literature review, methodological aspects, analysis of results, discussion of findings, and final considerations.

2 Theoretical Framework

The concept of sustainability involves at least three dimensions: economic, environmental, and social (Arantes & Pereira, 2021). Thus, it is understood that for a municipality to be considered sustainable, it must address these dimensions in a balanced and inseparable manner. Within the dimensions of sustainability, several environmental issues are included, such as green procurement, sustainable buildings, public transportation networks using renewable energy sources, proper disposal of solid waste and liquid effluents, and mitigation of greenhouse gas emissions. There are also economic and social issues, such as the socioeconomic vulnerability of populations lacking adequate access to fundamental social rights related to education, decent housing, employment, among others. These vulnerabilities are often reflected in insufficient public safety, among other aspects that require proper development (Cortese, Kniess, & Maccari, 2019). These aspects naturally involve economic concerns, both from the perspective of public management and from that of private sector leaders.

Ignacy Sachs (1993), in a seminal work on sustainable development, argues that its dimensions are interconnected and cannot be addressed in isolation. He warns against solutions that are insufficient or even harmful in the long term, emphasizing the relevance of a comprehensive approach that considers multiple dimensions to achieve sustainable and equitable development.

Jeffrey Sachs (2017), in his book *The Age of Sustainable Development*, reinforces this concept. Among the three dimensions considered fundamental, the environmental dimension focuses on mitigating environmental impacts and preserving natural resources; the social dimension refers to human well-being, equity, and social justice; while the economic dimension is concerned with creating economic systems that are viable in the long term. This involves the

pursuit of inclusive economic growth that generates decent jobs and does not exhaust natural resources in an unsustainable manner.

In this context, and in light of the urgency surrounding issues that demand a more rational and sustainable form of development, the UN published the 2030 Agenda in 2015 and established the following 17 SDGs:

> 1 – no poverty; 2 – zero hunger and sustainable agriculture; 3 – good health and well-being; 4 – quality education; 5 – gender equality; 6 – clean water and sanitation; 7 – affordable and clean energy; 8 – decent work and economic growth; 9 – industry, innovation, and infrastructure; 10 – reduced inequalities; 11 – sustainable cities and communities; 12 – responsible consumption and production; 13 – climate action; 14 – life below water; 15 – life on land; 16 – peace, justice, and strong institutions; 17 – partnerships for the goals and means of implementation (UN, 2015, n.p.).

Lima and Ribeiro (2023) analyzed the influence of the SDGs on the field of Social Sciences, particularly in relation to the promotion of well-being and inclusive development; internal and external support; the specific aspects of each country in implementing innovation; territorial engagement; alternative strategies; changes in quality of life and shared governance; global supply chains; and the relevance of education in responsible management. Based on a bibliographic coupling map with co-citation analysis of selected articles, the authors identified seven clusters addressing: corporate civil responsibility in the field of social sciences applied to SDG development; the interdependence among Sustainable Development Goals; investigation of the 17 SDGs; the role of multinational corporations in SDG development; "influences of stakeholder pressure on organizations to develop Corporate Social Responsibility policies and practices"; challenges to SDG implementation; the importance of the private sector in implementing the SDGs; and education in responsible management, aligned with the *Principles for Responsible Management Education* (PRME) (Avelar, Farina & Pereira, 2022) in relation to the SDGs.

Consistent with the reviewed literature, sustainable urban management plans must also integrate municipal agencies working on related themes and consolidate relevant information. Such planning should be developed through a systemic approach, strategically structured to promote integration and ensure participation. Projects should be designed for implementation in the short, medium, and long term, with continuity guaranteed and the possibility of establishing goals that can be gradually achieved over time, along with public access to the monitoring of these targets (Negreiros & Abiko, 2019).

Cities are composed of both urban and natural spaces, with boundaries often defined by natural constraints. Therefore, their analysis requires a broad, systemic approach to both urban and natural environments (Martins & Cândido, 2015). Sustainability indicators map and assess the *interdependence* among these sustainability dimensions, which also encompass aspects of municipal management related to sustainability (Silva, Rebouças, Abreu & Ribeiro, 2018).

To achieve a global agenda, local actions are required for the implementation and realization of the SDGs. In this regard, the local and urban sphere becomes fundamental, serving as a site of experimentation and goal fulfillment through integrated and context-sensitive actions directed at the population, specific localities, and regional particularities

(Vieira, 2020). Although the rules and targets are general in nature, they must be aligned with the context of sustainable regional development.

Frey, Torres, and Jacobi (2020) analyzed the SDGs in relation to the São Paulo macrometropolis and identified several challenges for public managers, particularly regarding the need for greater progress due to the low adherence to Brazil's national targets for achieving the SDGs. They emphasized the need for profound changes, ongoing critical discussion, and the development of illustrative studies to strengthen the applicability of the 17 SDGs in the context of the São Paulo macrometropolitan region, so that strategies, especially those aimed at addressing increasingly frequent ecological crises, can be created.

Considering the automobile manufacturing plants still strongly present in the region under study, companies seek to align economic and environmental dimensions in the development of their activities, while also addressing "concerns about the social aspect of sustainability" (Scur & Heinz, 2016, p. 290). These findings reinforce the fundamental dimensions underpinning the concept of sustainability: economic, environmental, and social (Cortese et al., 2019).

With regard to sustainability education, there are still challenges in understanding the discipline related to sustainability and its practical implications, particularly in undergraduate programs such as Business Administration. Developing a systemic and interdisciplinary approach is essential (Ávila, Santos & Vieira, 2015; Avelar, Farina & Pereira, 2022). The inclusion of Sustainability as a discipline within the field of Social Sciences is fundamental to the development of the SDGs, as reinforced by Avelar, Silva-Oliveira, Farina & Pereira (2022) and Lima and Ribeiro (2023).

Regarding municipal management, studies show that the municipalities in the ABC Paulista Region still depend on external energy resources (Agostinho, Almeida, Gianeti & Sevegnani, 2017). Additionally, some municipalities are more vulnerable than others, experiencing interdependent economic and climate-related impacts, such as heavy rainfall, notably in Diadema and Mauá (Valverde, 2017). These issues reinforce the interdependence between urban spaces and natural environments, with boundaries imposed by natural conditions, and their implications for sustainability, which must be considered at both municipal and regional levels (Martins & Cândido, 2015; Silva et al., 2018; Negreiros & Abiko, 2019).

For example, regarding solid waste management and the shared responsibility between micro and small enterprises and municipal public authorities, excluding industrial and healthcare waste, there remains a gap between the proposals and the actual practices implemented by the respective social actors (Picchiai & Senigalia, 2019). An analysis of solid waste management in the municipalities of Santo André, São Bernardo do Campo, and São Caetano do Sul revealed varying results and performance levels, despite challenges in implementation, with the municipality of Santo André standing out positively in comparison to the others (Frata & Tonelli, 2018).

According to Oliveira, Trindade, and Pereira (2013), 56% of the ABC Paulista Region consists of watershed and environmental protection areas, which complicates the establishment of sanitary landfills. Currently, only the municipality of Santo André has a public sanitary landfill, while the remaining municipalities in the region rely on a single private landfill located in the municipality of Mauá. For the biodegradation process of solid waste, the use of biogas

represents a renewable energy source, and in this regard, the implementation of thermoelectric plants in the region could be a viable option (Candiani & Vieira, 2021).

Although sustainability is a global demand, it is implemented through local and regional agendas (Vieira, 2020). In other words, integrated local actions tailored to territorial specificities are essential in promoting regional progress and aligning with the global SDG agendas.

3 Methodology

This research is exploratory in nature and adopts a qualitative approach (Creswell, 2014). It began with a literature review related to the dimensions of sustainability in the region and, subsequently, secondary data were collected from two municipal SDG indicator platforms: the Sustainable City Development Index – Brazil (IDSC-BR) and the Sustainable Development Goals Index – Brazil (SDG Index Brazil).

For the literature review conducted using the database of the Coordination for the Improvement of Higher Education Personnel (CAPES), the selected period ranged from January 2015 to December 2023. The focus was to analyze the progress and challenges in the development of sustainability dimensions in relation to the fulfillment of the SDGs in the ABC Paulista Region, using the descriptors "*ODS Região ABC Paulista*" (SDG ABC Paulista region) and "*Objetivos de Desenvolvimento Sustentável ABC*" (Sustainable Development Goals ABC). The inclusion criteria were articles published in journals during the selected period, and the exclusion criteria were articles without open access and those unrelated to the overall theme of this study. A total of 35 publications were found, from which seven articles were selected that jointly addressed the descriptors (SDGs, ABC Region), thus highlighting the research gap to be explored.

In a second stage, the scores achieved by each municipality were collected individually for each of the SDGs, using the IDSC-BR and the SDG Index Brazil. This enabled not only a comparison between the municipalities but also an assessment of the results of the ABC Paulista Region in relation to the national outcomes for each of the SDGs.

The *Sustainable City Development Index – Brazil* (IDSC-BR) is produced by the Instituto Cidades Sustentáveis (Sustainable Cities Institute) under the *Sustainable Cities Program*, in partnership with the Sustainable Development Solutions Network (SDSN). It is supported by the Brazilian Center for Analysis and Planning (Cebrap) and financed by the CITinova Project. The methodology was developed by the SDSN network, an initiative of the United Nations. The IDSC-BR assesses the distance to achieving the Brazilian targets established for the SDGs across the 5,570 Brazilian municipalities. The index uses 100 indicators based on public administration performance (IDSC-BR, 2024). It applies a scale from 0 to 100, interpreted as a percentage (IDSC, 2024).

The other index used, the *SDG Index Brazil*, is produced by the Brazilian Institute of Geography and Statistics (IBGE) with the aim of monitoring the progress of the SDGs within Public Administration so that public policies can be created to support the achievement of the 2030 Agenda (IDSC-BR, 2024). The next section presents an analysis of the municipalities in the ABC Paulista Region based on the two sustainability indicators selected for this study.

4 Results Analysis

The analysis of the seven municipalities in the ABC Paulista Region using sustainability indicators—IDSC-BR, which includes specific data, and data provided by IBGE and by Performance per SDG—enabled the construction of Table 1 (IDSC-BR, 2024). This table presents a representation of the level of development of the municipalities in relation to the 17 SDGs, using a percentage-based classification. According to the IDSC-BR, there are no municipalities in Brazil with scores above 60 points, a level considered "high," and 40% are classified at a "low" level of SDG development (IDSC-BR, 2024).

Table 1

IDSC-BR measurement indicators in the seven municipalities of the ABC Paulista region

IDSC-BR	General Index (% out of 100)
Diadema	50.31
Mauá	52.90
Ribeirão Pires	51.34
Rio Grande da Serra	52.16
Santo André	40.41
São Bernardo do Campo	54.20
São Caetano do Sul	63.42

Source: IDSC-BR (2024, n.p.)

Table 1 shows that, with the exception of Santo André, all other cities are above 50% in terms of progress toward meeting the targets, according to the IDSC-BR index in 2024.

When researching SDG indicators used to assess whether municipalities are progressing or not, the indicators presented in Table 2 were identified. Additionally, to assess Brazil's overall situation in relation to the SDGs, the SDG Index Brazil was used.

Table 2

SDG Brazil measurement indicators by IBGE

SDG Brazil	254 Indicators	Percentage (%)
Produced	120	47.24
Under analysis/construction	73	28.74
No data available	51	20.08
Not applicable to Brazil	10	3.94

Source: IBGE, 2024, n.p.

Table 2 shows that, when the analysis is broadened to include all municipalities in Brazil, the "Produced" general index does not reach 50% of the target. This indicates that the seven municipalities of the ABC Paulista Region are slightly more advanced when compared to the national index.

Figures 1 through 14 below present the status of each of the SDGs in each of the seven municipalities in the ABC Paulista Region, highlighting both strengths and areas requiring attention. These figures use the IDSC-BR index as of January 2024 as a reference.

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Figure 1
IDSC - Santo André

Source: Translated from IDSC-BR (2024, n.p.)

The city of Santo André presents a level considered low, with good and very good performance in the SDGs marked in shades of green, indicating progress as the color deepens. The city shows positive highlights in SDGs 10, 11, and 16. However, there is still a need for greater development in the SDGs represented in yellow, orange, and red, which also intensify according to the level of concern. The gray color, representing SDG 14, indicates that this particular goal does not apply to the municipality.

Figure 2
Performance by SDG - Santo André
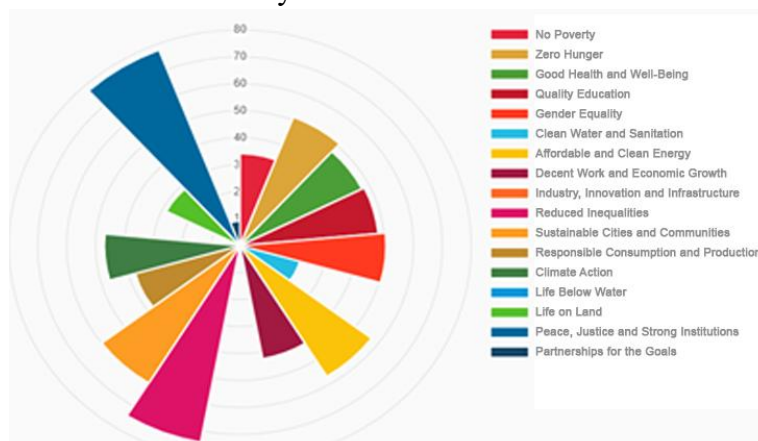
Source: Translated from IDSC-BR (2024, n.p.)

In the radar chart, it is possible to observe the extent to which each SDG has been addressed in the city, with a percentage-based representation of the progress made or still required for each goal. In Santo André, the greatest progress is seen in SDG 16 – Peace, Justice, and Strong Institutions. Conversely, the SDGs showing the least progress in this radar chart are SDG 9 – Industry, Innovation, and Infrastructure, along with SDG 14 – Life Below Water.
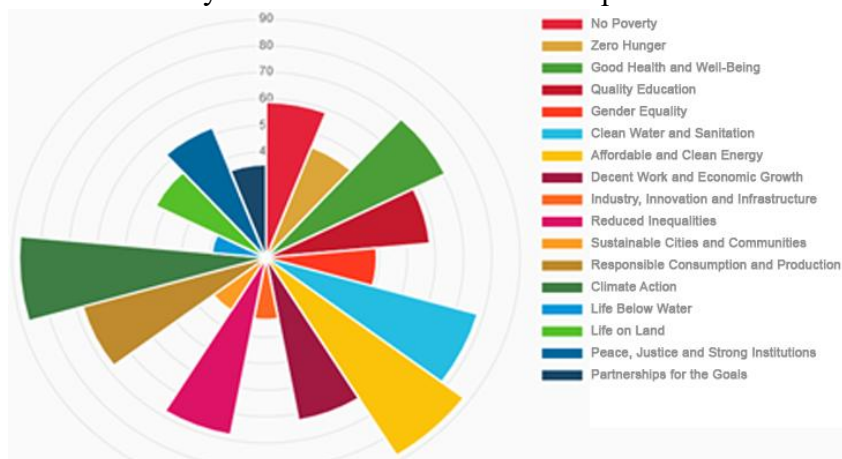
Figure 3
IDSC - São Bernardo do Campo
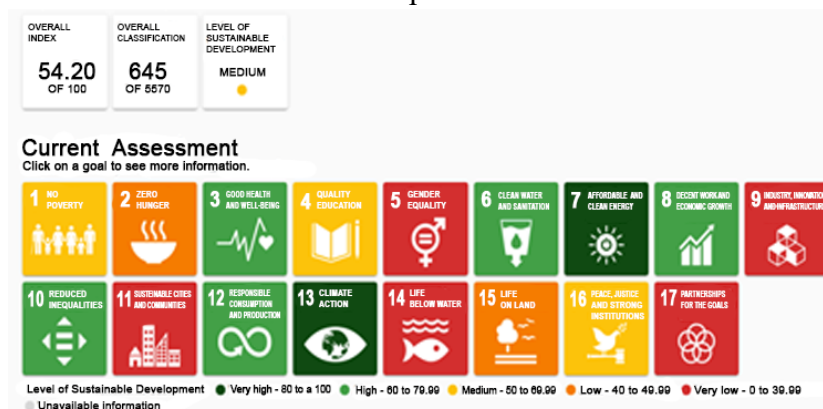
Source: Translated from IDSC-BR (2024, n.p.)

Continuing the analysis of strengths and areas for improvement using the IDSC-BR indicator, the city of São Bernardo do Campo reaches a level considered medium, with good and very good performance in the SDGs marked in shades of green, indicating progress as the color deepens. The city stands out in SDGs 3, 6, 7, 8, 10, 12, and 13. However, there remains a need for further development in the SDGs represented by yellow, orange, and red, which also intensify in tone according to the degree of concern.

Figure 4
Performance by SDG - São Bernardo do Campo

Source: Translated from IDSC-BR (2024, n.p.)

In the radar chart shown in Figure 2, it is possible to observe the extent to which the SDGs have been addressed in the city, with a percentage-based representation of the progress made or still required for each goal. In this case, positive highlights include SDGs 7 and 13, while SDGs 9, 11, and 14 show the lowest levels of progress.
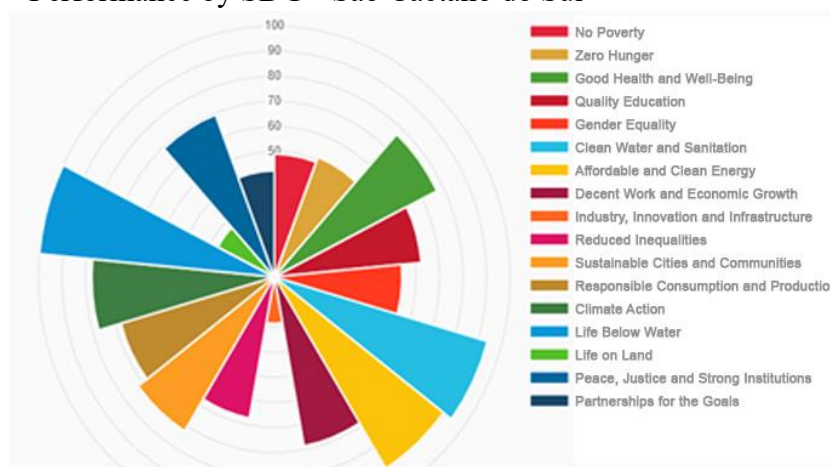
Figure 5

IDSC - São Caetano do Sul

Source: Translated from IDSC-BR (2024, n.p.)

The city of São Caetano do Sul reaches a level considered high, with good and very good performance in the SDGs marked in shades of green, indicating progress as the color deepens. The city stands out in SDGs 3, 4, 6, 7, 8, 11, 12, 13, 14, and 16. However, there is still a need for further development in the SDGs represented by yellow, orange, and red, which also intensify in tone according to the level of concern.

Figure 6

Performance by SDG - São Caetano do Sul

Source: Translated from IDSC-BR (2024, n.p.)

The radar chart clearly shows the extent to which SDGs 6, 7, and 14 have been addressed in the city, while also highlighting, in percentage terms, the need for greater efforts toward SDGs 9 and 15.
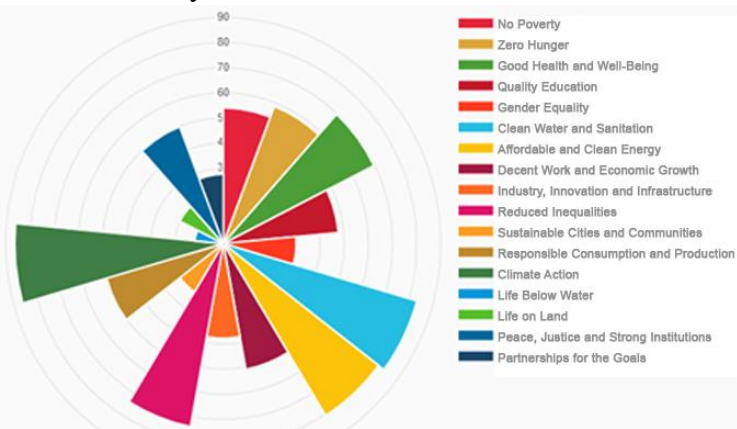
Figure 7
IDSC Diadema

Source: Translated from IDSC-BR (2024, n.p.)

The city of Diadema reaches a level considered medium, with good and very good performance in the SDGs represented in shades of green, indicating progress as the color deepens. The city shows positive highlights in SDGs 3, 6, 7, 10, and 13. However, there is still a need for further development in the SDGs marked in yellow, orange, and red, which also intensify in tone according to the level of concern (Figure 7).

Figure 8
Performance by SDG – Diadema

Source: Translated from IDSC-BR (2024, n.p.)

In the case of Diadema, the radar chart shows that SDGs 13, 6, and 7 achieved the greatest progress, respectively. On the other hand, SDGs 14, 15, and 11 displayed the lowest performance levels in the city (Figure 8).

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Figure 9

IDSC –Mauá
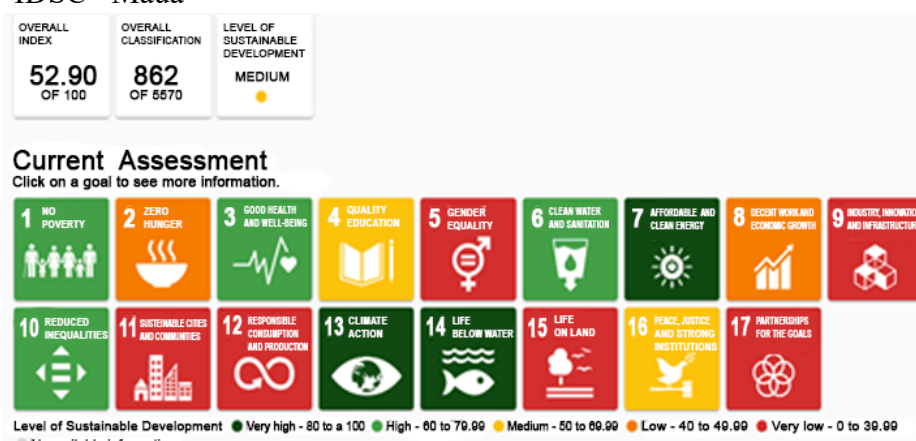
Source: Translated from IDSC-BR (2024, n.p.)

The municipality of Mauá reaches a level considered medium, with good and very good performance in the SDGs represented in shades of green, indicating progress as the color deepens. The city shows positive highlights in SDGs 1, 3, 6, 7, 10, 13, and 14. However, there is still a need for further development in the SDGs marked in yellow, orange, and red, which also intensify in tone according to the level of concern.

Figura 10

Performance by SDG - Mauá
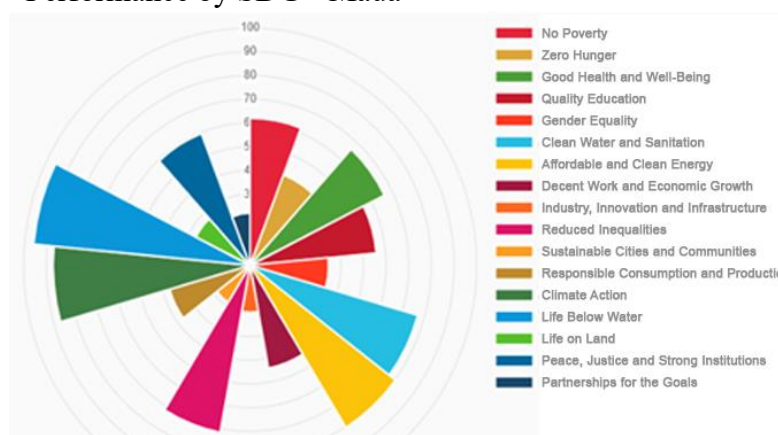
Source: Translated from IDSC-BR (2024, n.p.)

The radar chart for Mauá shows that the city performed best in SDGs 15, 14, 7, and 6. In contrast, SDGs 10, 17, 8, and 15 showed the weakest performance levels.
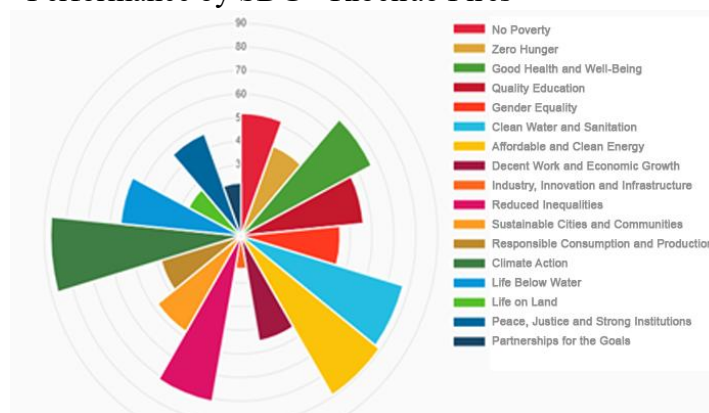
Figura 11

IDSC - Ribeirão Pires

Source: Translated from IDSC-BR (2024, n.p.)

The city of Ribeirão Pires reaches a level considered medium, with good and very good performance in the SDGs represented in shades of green, indicating progress as the color deepens. The city stands out in SDGs 3, 6, 7, 10, and 13. However, there is still a need for further development in the SDGs marked in yellow, orange, and red, which also intensify in tone according to the level of concern.

Figure 12

Performance by SDG - Ribeirão Pires

Source: Translated from IDSC-BR (2024, n.p.)

In Ribeirão Pires, the radar chart shows the best performance in SDGs 13, 7, and 6, while the weakest results are observed in SDGs 9, 17, and 15.

Figura 13

IDSC – Rio Grande da Serra

Source: Translated from IDSC-BR (2024, n.p.)

The city of Rio Grande da Serra reaches a level considered medium, with good and very good performance in the SDGs represented in shades of green, indicating progress as the color deepens. The city shows positive highlights in SDGs 3, 4, 6, 7, 10, 12, 13, and 16. However, there is still a need for further development in the SDGs marked in yellow, orange, and red, which also intensify in tone according to the level of concern.

Figure 14

Performance by SDG - Rio Grande da Serra
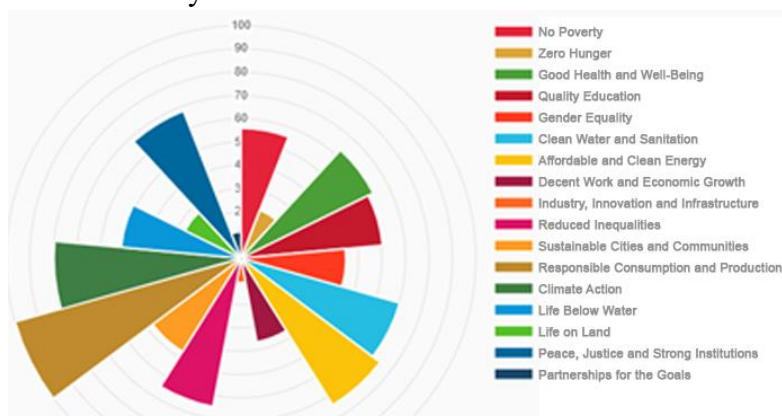
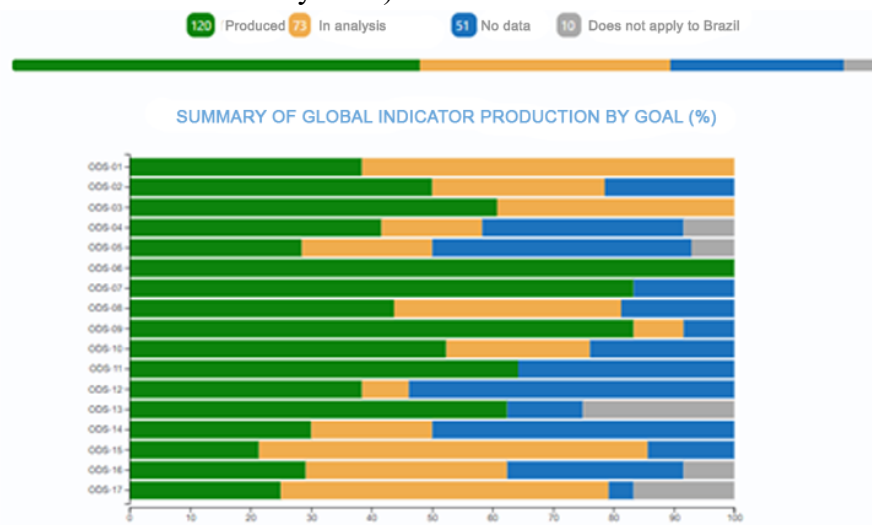Source: Translated from IDSC-BR (2024, n.p.)

Concluding the analysis of the radar charts, it is observed that in the case of Rio Grande da Serra, the city shows its strongest performance in SDG 12 – Responsible Consumption and Production, and its weakest in SDG 9 – Industry, Innovation, and Infrastructure, possibly due to the presence of environmental preservation areas within the municipality.

Aiming to provide a more accurate comparative understanding among the seven municipalities, the greatest progress was observed in SDG 13 – Climate Action, while the least progress was seen in SDG 9 – Industry, Innovation, and Infrastructure.

Additionally, to offer an overview of the national context, Figures 15 and 16 present Brazil's situation in relation to each of the SDGs, grouped according to IBGE (2023).

Figure 15

Brazilian Indicators for the Sustainable Development Goals (Summary of Global Indicator Production by Goal)

Source: Translated from IBGE 2024 n.p.

The analysis of Figure 15 reveals notable progress in relation to SDG 6 – Clean Water and Sanitation, although it is widely acknowledged that much remains to be done in this area in Brazil. For several other SDGs, the absence of sufficient data prevents a more accurate analysis. Viewed from another perspective, Figure 16 presents the status of each Goal along with the number of indicators used for each SDG.

Figure 16

Brazilian Indicators for the Sustainable Development Goals (Status by Goal)

Source: Translated from IBGE 2024, n.p.

When analyzing the overall index for each SDG provided by IBGE, as shown in the consolidated national data in Figure 16, it becomes clear that much has already been accomplished in relation to the SDGs. However, a considerable effort is still required, as the 2030 Agenda is approaching a decisive moment, with only six years remaining.

This context reveals both progress and weaknesses in meeting the SDG targets established by the country, particularly within the studied geographic area, the ABC Paulista Region.

Among the seven cities analyzed, with the exception of Santo André, all others have achieved scores above 50% (Table 1), placing them above the national SDG Index, which stands at 47.20% for indicators classified as "produced" (Table 2). It is worth noting that São Caetano do Sul ranks first in the state of São Paulo, according to the IDSC-BR indicator (Figures 5 and 6).

Other noteworthy points include SDG 9 (Industry, Innovation, and Infrastructure), which is generally considered satisfactory at the national level. However, in the ABC Paulista Region, the situation is less favorable, indicating the need for further development to align with other regions of the country. Conversely, with regard to SDG 10 (Reduced Inequalities), the opposite is observed, the region is more advanced in this area compared to others in the country (Table 3).

Table 3

Comparison Between IDSC-BR Index (Seven Municipalities of the ABC Paulista Region) and SDG-BR (Brazil)

SDG	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
SBC	yellow	orange	green	yellow	red	green	green	green	red	green	red	green	green	red	orange	yellow	red
SCS	orange	yellow	green	green	yellow	green	green	green	red	yellow	green	green	green	red	red	green	orange
STA	red	yellow	orange	orange	yellow	red	yellow	orange	red	green	green	red	orange	gray	red	red	red
DIA	yellow	yellow	green	green	red	green	green	yellow	red	green	red	yellow	green	red	red	orange	red
MAU	green	orange	green	yellow	green	green	green	red	green	green	green	green	green	orange	yellow	green	red
RPI	yellow	orange	green	yellow	green	green	green	orange	green	green	orange	green	green	yellow	green	orange	green
RGS	yellow	red	green	green	orange	green	green	red	red	green	green	green	green	yellow	green	green	red
BRA	orange	yellow	green	orange	red	green	green	orange	green	yellow	green	red	green	red	red	red	red

Source: Prepared by the authors

Table 3 provides a comprehensive overview of the status of each SDG in each of the seven municipalities, with color coding based on the IDSC-BR (Figures 1 to 14): red indicates very poor performance, orange poor, yellow fair, and green good/very good. Additionally, it is possible to compare the status of each of these cities with the national context by referencing the SDG-BR index (Figures 15 and 16).

5 Discussion of Results

Based on the data collected from the IDSC-BR and SDG-BR sustainability indicators across the seven municipalities of the ABC Paulista Region, and from the comparative analysis of each city's performance regarding the development of each SDG—as well as in relation to the other municipalities in the region—the results reveal that, regardless of the source of the analyzed indicators, there was a degree of alignment, almost a standardization, among the municipalities. This alignment is related to shared progress in SDG development, common environmental demands, and the factors, attributes, and performance indicators observed across the seven cities.

This confirms the relevance of the issues highlighted by Lima and Ribeiro (2023). Municipal-level challenges reflect those at the state and national levels, emphasizing the difficulties in implementing the SDGs across all spheres—federal, state, and municipal—and the necessary interdependence for their development, given the urgency of implementing all 17 SDGs in time to meet the 2030 Agenda. In line with the reviewed literature (Oliveira, Pereira & Trindade, 2013; Vieira, 2020; Frey *et al.*, 2020; Cândido & Martins, 2015; Silva *et al.*, 2018; Abiko & Negreiros, 2019), it is clear that there is a need for progress in nearly all SDGs.

Thus, although the municipal indices analyzed are above the national average for the SDG Index and show particular strength in SDG 10 (Reduced Inequalities), SDG 9 (Industry, Innovation, and Infrastructure) still falls behind national implementation levels due to regional characteristics. Therefore, considerable progress is still needed for the full implementation of the SDGs in the municipalities of the ABC Paulista Region, as well as in other municipalities across Brazil, to meet the targets of the 2030 Agenda.

In this regard, the results highlight the importance of aligning and uniformly implementing all SDGs across the municipalities in the region. This reinforces the broader need for municipalities throughout the country to advance in the concept of sustainability by developing the SDGs across multiple dimensions (Cortese et al., 2019). Accordingly, the various dimensions of sustainability and the different SDGs must be developed in an interconnected manner in order to achieve fully sustainable and equitable development (Sachs, 1993).

6 Final Considerations

This article aimed to compare municipal progress in relation to the SDGs using the sustainability indices IDSC-BR and SDG-BR across the seven municipalities that comprise the ABC Paulista Region. Regardless of the source of the indicators, it was found that there is alignment, almost a standardization, among the municipalities in terms of strategies, environmental demands, and the factors, attributes, and performance indicators across the three dimensions: environmental, economic, and social.

Based on the information presented, the sustainability indicators selected for this study revealed both strengths and challenges to be addressed by the municipalities, with potential impacts on their sustainable development. In light of this reality, the results indicate that, even when considering the different indicators analyzed, there is alignment and standardization among the municipalities regarding SDG progress, environmental demands, and performance indicators across the seven cities. In summary, the municipalities share both challenges and advances that stem from the characteristics of the ABC Paulista Region and its regional development dynamics.

These reflections are echoed in the theoretical field, where authors emphasize that sustainability encompasses multiple dimensions and highlight the challenges of implementing the SDGs comprehensively and uniformly within specific territories. These issues were reinforced by the observed interdependence among municipalities, natural boundaries, and the need for sustainable urban management.

Among the limitations identified, despite the evaluation using 100 indicators to monitor municipal performance, it was not possible to cover all dimensions of the intended goals due to the lack of data from official public sources. There is a need for greater investment in administrative statistical systems to ensure the availability of key data for monitoring the SDGs. Another limitation of the index relates to the reference year of certain indicators. Due to the lack of updates, some of the data used are relatively outdated. This highlights the importance of investing in more recent and regularly updated data.

Additionally, the use of the arithmetic mean across all indicators, assigning equal weight to each, may obscure priority areas, especially when a municipality performs well in most

indicators but faces significant challenges in one or two specific areas. This phenomenon draws attention to the issue of substitution or compensation in composite indices.

In light of the above, this research does not conclude the discussion but instead points to the need for further comparative studies on regional development and territorial progress in implementing the SDGs across the multiple dimensions of sustainability. Such efforts may contribute to more regionally focused analyses and broader national research.

References

Agenda 2030. *Índice de Desenvolvimento Sustentável das Cidades/Brasil*. (2024). Disponível em https://www.cidadessustentaveis.org.br/institucional/pagina/agenda2030.

Arantes, M. V. C., & Pereira, R. S. (2021). Análise crítica dos 10 anos de criação e implementação da Política Nacional de Resíduos Sólidos (PNRS) no Brasil. *Revista Liceu On-Line*, *11*(1), 48-66.

Avila, A. D. S., Santos, J. A. C., & Vieira, A. M. (2015). A construção de uma visão sistêmica na formação do administrador: a perspectiva do egresso sobre a disciplina sustentabilidade. *Revista Gestão & Sustentabilidade Ambiental*, [S. l.], *4(1)*, 289–312. DOI: 10.19177/rgsa v4e12015289-312. Disponível em https://portaldeperiodicos.animaeducacao.com.br/index.php/gestao_ambiental/article/view/2402.

Avelar, A. B. A., Farina, M. C., & Pereira, R. S. (2022). Principles for responsible management education-PRME: Collaboration among researchers. *The International Journal of Management Education*, *20*(2), 100642.

Avelar, A. B. A., Silva-Oliveira, K. D. D., Farina, M. C., & Pereira, R. S. (2022). Contribution of PRME in education, research, and outreach in Brazilian higher education institutions. *International Journal of Sustainability in Higher Education*, *23*(2), 283-300.

Cortese, T. T. P., Kniess, C. T., & Maccari, E. A. (2017). *Cidades inteligentes e sustentáveis*. São Paulo: Manole.

Creswell, J. W. (2014). *Investigação qualitativa de pesquisa: escolhendo entre as cinco abordagens*. Tradução: Sandra Mallmam da Rosa: Porto Alegre: Penso.

Frey, K., Torres, P. H. C., Jacobi, P. R., & Ramos, R. F. (Orgs.). (2020). *Objetivos do desenvolvimento sustentável: desafios para o planejamento e a governança ambiental na Macrometrópole Paulista*. EdUFABC.

Instituto Brasileiro de Geografia e Estatística - IBGE. (2023). *Indicadores de desenvolvimento sustentável: Coordenação de Recursos Naturais e Estudos Ambientais [e] Coordenação de Geografia*. Rio de Janeiro.

IDSC. (2023). *Índice de Desenvolvimento Sustentável das Cidades/Brasil*. Disponível em https://idsc.cidadessustentaveis.org.br/introduction.

SDG Transformation Center. (2023). *O Índice de Desenvolvimento Sustentável das Cidades - Brasil (IDSC-BR).* Instituto Cidades Sustentáveis & Sustainable Development Solutions Network: São Paulo & Paris. Disponível em https://www.sdgindex.org/reports/indice-de-desenvolvimento-sustentavel-das-cidades-brasil/ .

Lima, A. A., & Ribeiro, T. L. S. (2023). *Mapeamento dos Objetivos de Desenvolvimento Sustentável Pesquisa em Ciências Sociais: Uma Análise Bibliométrica*. Revisão do Journal of Lifestyle and SDGs, *[S. l.]*, e01562. DOI: 10.37497/2965-

730X.SDGsReview.v3. n00.pe01562. Disponível em
https://periodicosalumniin.org/LifestyleJournal/article/view/1562 .

Martins, M. F., & Cândido, G. A. (2015). Modelo de avaliação do nível de sustentabilidade urbana: proposta para as cidades brasileiras.*, Revista Brasileira de Gestão Urbana*, *7(3)*. https://doi.org/10.1590/2175-3369.007.003.AO09. Disponível em https://www.scielo.br/j/urbe/a/R33R37Bb8ZSjRrbTtsN63Mm/#

Nações Unidas Brasil. (2023). *Objetivos de Desenvolvimento Sustentável*. Disponível em: https://brasil.un.org/pt-br/sdgs

Negreiros, I., & Abiko, A. K. (2019). Normalização técnica para cidades e comunidades sustentáveis. In: Philippi Jr, A. C., & Bruna G. (2019). *Gestão urbana e sustentabilidade*. Barueri: Manole. E-book. ISBN 9788520462935. Disponível em https://integrada.minhabiblioteca.com.br/#/books/9788520462935/

Oliveira, E. C., Trindade, F. H., & Pereira, R. S. (2013). Políticas Públicas Indutoras do Desenvolvimento Sustentável Local: Um Estudo Sobre o Programa Município Verde Azul na Região do Grande ABC. *Administração Pública e Gestão Social*, [S. l.], *7(3),* 109–119. DOI: 10.21118/apgs. v7i3.4493. Disponível em https://periodicos.ufv.br/apgs/article/view/4493.

Oliveira, S.V.W.B. D., Leoneti, A., & Cezarino, L. O. (2019). *Sustentabilidade: princípios e estratégias*. Editora Manole.

Organização das Nações Unidas. (1987). Relatório da Comissão Mundial Sobre o Meio Ambiente e Desenvolvimento. *Nosso Futuro Comum*. Disponível em: https://www.are.admin.ch/are/en/home/media/publications/sustainable-development/brundtland-report.html

Organização das Nações Unidas. (2015). *Objetivos de Desenvolvimento Sustentável*. [S. l.: s. n.]. Disponível em https://brasil.un.org/pt-br/sdgs

Phillip Jr, A., & Bruna, G. C. (2019). *Gestão urbana e sustentabilidade*. Editora Manole.

Picchiai, D., & Senigalia, F. (2019). Gestão de Resíduos Sólidos Integrada às Responsabilidades das Micro e Pequenas Empresas e do Poder Público Municipal. *Desenvolvimento em Questão*, [S. l.], *17(49),* 112–135. DOI: 10.21527/2237-6453.2019.49.112-135. Disponível em https://www.revistas.unijui.edu.br/index.php/desenvolvimentoemquestao/article/view/8433.

Puga Sarubbi, M., & Schmidt Bueno de Moraes, C. (2019). Avaliação comparativa de metodologias de indicadores para a sustentabilidade urbana. *Cadernos Zygmunt Bauman*, *8*(18). Disponível em: https://periodicoseletronicos.ufma.br/index.php/bauman/article/view/10243

Sachs, I. (1993). Estratégias de transição para o século XXI. In: Bursztyn, M. *Para Pensar o Desenvolvimento Sustentável*. São Paulo: Brasiliense.

Sachs, J. (2017). *A Era do Desenvolvimento Sustentável*. São Paulo: Actual.

Scur, G., & Heinz, G. (2016). A dimensão ambiental no contexto da estratégia de operações de montadoras do ABC paulista. *RBGN - Revista Brasileira de Gestão de Negócios*, *[S. l.]*, *18(60),* 290–304. DOI: 10.7819/rbgn. v18i60.2195. Disponível em https://rbgn.fecap.br/RBGN/article/view/2195 .

Sevegnani, O. F., Gianetti, B. F., Agostinho, O. F. O., & Almeida, C. M. V. B. (2017). Avaliação do potencial capacidade municipal de carga e comércio. *Revista de Produção Mais Limpa*, *153(1*), 425.

Silva, J. F. B. A., Rebouças, S. M. D. P., Abreu, M. C. S., & Ribeiro, M. C. R. (2018). Construção de um índice de desenvolvimento sustentável e análise espacial das desigualdades nos municípios cearenses. FGV EBAPE. *Revista de Administração Pública*, Rio de Janeiro *52(1),* 149-168. Disponível em https://www.scielo.br/j/rap/a/ywT6s5TkkNfkVWfLcsMrByd/?lang=pt&format=pdf

Valverde, M. C. (2017). A interdependência entre vulnerabilidade climática e socioeconômica na região do ABC Paulista. *Ambiente & Sociedade*, *20(*3), 39-60.

Vieira, I. C. G. (2019). Abordagens e desafios no uso de indicadores de sustentabilidade no contexto amazônico. *Ciência e Cultura*, *71*(1), 46-50.

Vieira, D. (2020). ODS e a importância local. In: Frey, K., Torres, P. H.C., Jacobi, P. R., & Ramos, R. F. (Org.). *Objetivos do desenvolvimento sustentável: desafios para o planejamento e a governança ambiental na Macrometrópole Paulista*. Santo André: EdUFABC, 31-39.

Vieira, L. C., & Candiani, G. (2021). Potencial energético de resíduos sólidos urbanos na Região do Grande ABC Paulista. *Revista Ibero-Americana de Ciências Ambientais*, *12(2*), 328-342.

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