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THE DECISIONS, ACTIONS AND POLICIES CONCEALED BY THE BASIC SANITATION INDICES IN THE SERIDÓ POTIGUAR IN 2021

As decisões, ações e políticas escamoteadas pelos índices do saneamento básico no Seridó potiguar em 2021

Las decisiones, acciones y políticas encubiertas por los índices de saneamiento básico en el Seridó potiguar en 2021

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ABSTRACT

Basic sanitation is understood as a set of infrastructures and actions aimed at water supply services, sanitary sewage, drainage and rainwater management and solid waste collection and management. Thus, there is a set of object systems and sanitation action systems aimed at guaranteeing this right. Each sanitation system has a particular urban coverage rate, which is the result of present and past political decisions and actions, as well as the verticalization of the National Basic Sanitation Policy and Plan on a local scale. With this in mind, the aim of this article is to analyse access to the four sanitation systems in 2021 for the inhabitants of the Seridó region of Rio Grande do Norte, paying attention to the actions of public authorities at municipal, regional and national level in order to achieve the universalization of this right. Methodologically, we used bibliographical and documentary research, as well as the technical procedure of collecting secondary data. The study revealed discrepancies in the urban coverage of sanitation systems in the Seridó region of Rio Grande do Norte and in the provision of information by municipalities to the National Sanitation Information System. The disparities in access to basic sanitation in this area in 2021 make it difficult for this social right to be universalized. However, this situation is also linked to past conceptions of the Brazilian state, which have not yet been fully overcome and are even embodied in the Seridó potiguar.

Keywords: Basic sanitation; Systems of objects and systems of actions; Seridó potiguar.

RESUMO

O saneamento básico é compreendido como o conjunto de infraestruturas e ações voltadas aos serviços de abastecimento de água, esgotamento sanitário, drenagem e manejo das águas pluviais e coleta e manejo dos resíduos sólidos. Destarte, tem-se um conjunto de sistemas de objetos e sistemas de ações sanitários, que visam garantir este direito. Cada sistema sanitário registra um índice de cobertura urbana particular, que resulta de decisões e ações políticas do presente e de outrora, além da verticalização da Política e do Plano Nacional de Saneamento Básico na escala local. A partir disso, este artigo tem como objetivo analisar o acesso dos citadinos do Seridó potiguar aos quatro sistemas sanitários em 2021, atentando para a atuação do poder público na esfera municipal, regional e nacional para que se alcance a universalização deste direito. Metodologicamente, foram utilizadas pesquisas bibliográfica e documental, além do procedimento técnico de levantamento de dados secundários. O estudo evidenciou discrepâncias na cobertura urbana dos sistemas sanitários no Seridó potiguar e na disponibilização das informações pelas Prefeituras municipais ao Sistema Nacional de Informações sobre Saneamento. As disparidades no acesso ao saneamento básico nesta área, em 2021, dificultam que este direito social seja universalizado. Todavia, esta conjuntura também está ligada a concepções de outrora do Estado brasileiro, que ainda não foram superadas plenamente e se consubstancializam, inclusive, no Seridó potiguar.

Palavras-chave: Saneamento básico; Sistemas de objetos e sistemas de ações; Seridó potiguar.

RESUMEN

Se entiende por saneamiento básico el conjunto de infraestructuras y actuaciones destinadas a los servicios de abastecimiento de agua, alcantarillado, drenaje y gestión de aguas pluviales y recogida y gestión de residuos sólidos. Así, existe un conjunto de sistemas objeto y sistemas de actuación de saneamiento que pretenden garantizar este derecho. Cada sistema de saneamiento tiene una tasa de cobertura urbana particular, que es el resultado de decisiones y acciones políticas presentes y pasadas, así como de la verticalización de la Política y del Plan Nacional de Saneamiento Básico a escala local. Teniendo esto en cuenta, el objetivo de este artículo es analizar el acceso a los cuatro sistemas de saneamiento en la región del Seridó de Rio Grande do Norte en 2021, observando las acciones de los poderes públicos a nivel municipal, regional y nacional para lograr la universalización de este derecho. Metodológicamente, se utilizó la investigación bibliográfica y documental, así como el procedimiento técnico de recogida de datos secundarios. El estudio reveló discrepancias en la cobertura urbana de los sistemas de saneamiento en la región de Seridó, en Rio Grande do Norte, y en el suministro de información por parte de los municipios al Sistema Nacional de Información sobre Saneamiento. Las disparidades en el acceso al saneamiento básico en esta zona en 2021 dificultan la universalización de este derecho social. Sin embargo, esta situación también está vinculada a concepciones pasadas del Estado brasileño, que aún no han sido plenamente superadas y que incluso se encarnan en el Seridó potiguar.

Palabras clave: Saneamiento básico; Sistemas de objetos y sistemas de acciones; Seridó potiguar.

1 INTRODUCTION

Understanding basic sanitation in Brazil can be based on its definition in the sector's regulations, in which it corresponds to a set of services, infrastructures and facilities aimed at water supply, sanitary sewage, drainage and rainwater management and solid waste

management (Brazil, 2007; 2020), but there are other possible readings. In this sense, Rezende and Heller (2008) suggested and pioneered the use of Santos' (2009) categories: systems of objects and systems of actions to understand the sector.

For this reason, it can be understood that some of its objects are: sanitary landfills, water supply and sewage networks, reservoirs, treatment plants, galleries, drainage channels, among others. Each of these objects involves a set of actions.

These actions range from water and sewage treatment to the final provision of sanitation systems and the final disposal of sewage, solid waste and rainwater. There are also actions aimed at evaluating and improving the techniques and objects used to provide them.

This set of objects and sanitation actions therefore requires an analysis that takes into account historical aspects and their forms - which reflect, among other factors, the actions of the Brazilian state through plans, programs and national policies, which are verticalized (Santos, 2009) at the local scale. Thus, it is understood that the configuration of this sector reflects the current situation, as well as the techniques, actions and decisions of yesteryear.

Based on these assumptions, the aim of this article is to analyse the citizen access to the four sanitation systems in the Seridó region of Rio Grande do Norte in 2021, looking at the actions of public authorities at municipal, regional and national level to achieve universalization of this right.

With regard to the spatial scope of this article, the Seridó is located in the Brazilian semi-arid region, where the physical-natural conditions cause a shortage of drinking water, which is also the result of rainfall records ranging from 200 to 800 mm/year and evaporation of up to 2,000 mm/year (Silva et al., 2010). Troleis and Silva (2018) add that this entire area is vulnerable to water collapse in the context of this state.

In general, these conditions affect the availability of water for supply. On the other hand, the sewage network is far removed from the principle of universalization set out in the National Basic Sanitation Plan (Plansab) (Brasil, 2013; 2019). In addition, the solid waste collection service faces impasses, since there is no landfill in the entire region, and rainwater drainage is the most deficient sanitation system in the Seridó.

This problem reinforces the relevance of studies that analyze access to this right, paying attention to the specificities that municipalities have in relation to the provision of these services, and the territorial distribution of sanitary objects throughout the Seridó potiguar.

This research therefore contributes to the analysis of this sector, as well as the actions of public authorities at municipal, regional and national level in the Seridó. Furthermore, it should be borne in mind that no studies have been found that consider the four sanitation systems in this region at the same time in the third decade of the 21st century, reinforcing the contribution of this article.

It's importante to emphasize that sanitation is a right and that the 1988 Federal Constitution (Brazil, 1988) makes it one of the competencies of the Federal Government, the states, the Federal District and the municipalities to develop programs to improve housing and sanitation. Similarly, the Universal Declaration of Human Rights (United Nations, 1948) recognizes this social service as a universal right - which was readmitted in Resolution 64/292 of the United Nations General Assembly (2010).

However, the Brazilian state was too slow in directing public actions towards guaranteeing this right. At first, these actions were actually commercially motivated. Rezende and Heller (2008) cite works such as those in Recife - under the orders of Maurício de Nassau in the 17th century - and Rio de Janeiro - already in the 19th century, with the arrival of the Portuguese Crown in the city. In both cases, the aim was to promote development to these cities and guarantee commercial relations.

In addition, these actions sought to guarantee the health of the elite, which forced the government to act to mitigate epidemics - such as cholera and yellow fever in the 19th century - and/or modernize the cities - citing urban reforms in the 20th century, such as Pereira Passos and Prestes Maia.

The questionable conduct of the Brazilian state with the systems of objects and sanitary actions was similarly applied to the development of Planasa. Conceived in the 1970s, this plan emphasized actions aimed at water supply and, to a lesser extent, sewage disposal (Almeida, 1977).

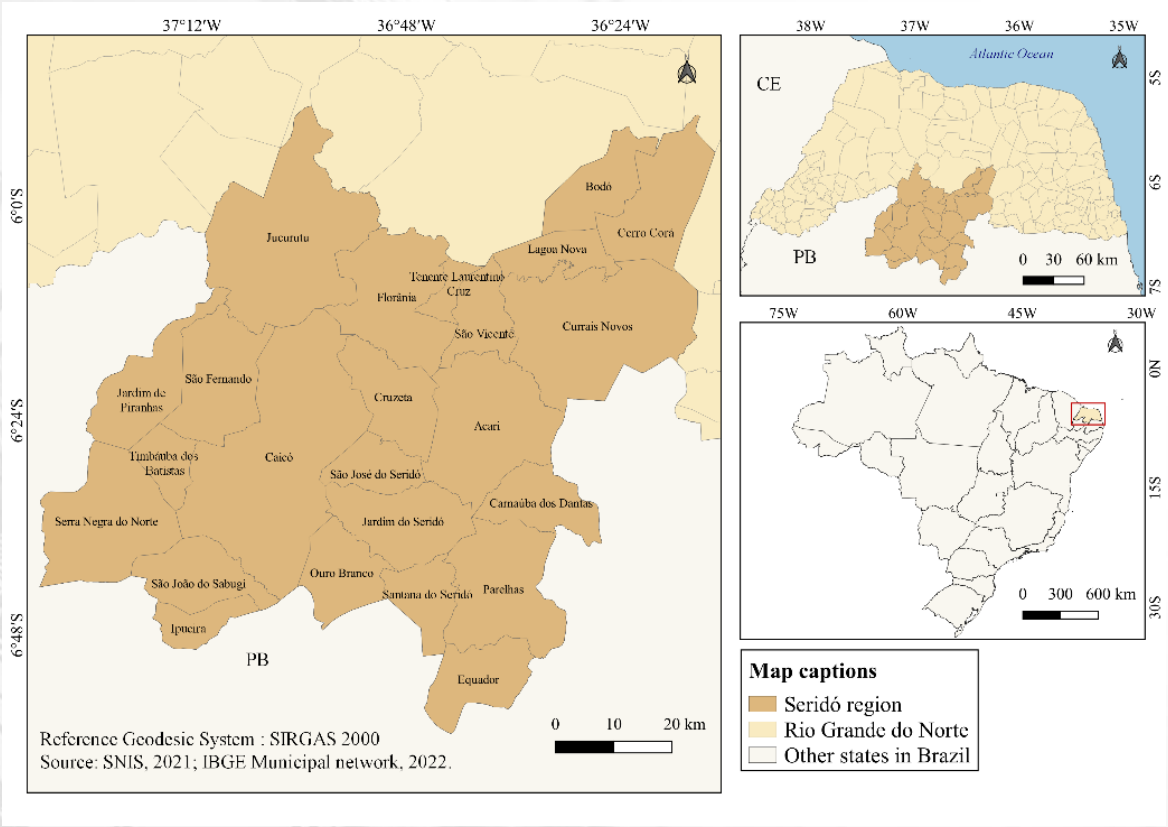
After Planasa, priority was given to investments in the first of these services, since investment in drinking water would result in a more secure financial return (Rezende; Heller, 2008). Therefore, this plan neglected, above all, the recognition and provision of rainwater drainage and solid waste management systems (Britto et al., 2012).

Nevertheless, the National Policy (Brazil, 2007), the National Plan (Brazil, 2013; 2019) and the New Legal Framework for Basic Sanitation (Brazil, 2020) understand universalization as one of the principles that should guide actions in this sector - which, if implemented, would break with its legacy of partiality.

2 METHODOLOGY

In terms of its objective, this study is classified as a descriptive-analytical study of access to basic sanitation in the Seridó (Figure 01) in 2021. Located in the central-southern portion of the state of Rio Grande do Sul, this area covers 24 municipalities and has the city of Caicó as its regional center, as defined by the IBGE (2020) in the study of Regions of Influence of Cities (REGIC).

Figure 01 – Seridó potiguar region (2023)



Source: IBGE (2020).

The technical procedures used were bibliographical, documentary and field research. The bibliographic research involved consulting works to understand this sector in Brazil, including Almeida (1977) on the National Sanitation Plan (Planasa) and Rezende and Heller (2008), Galvão Junior (2009) and Britto et al. (2012) on the national situation.

With regard to the regional scale, we based on the work of Figueiredo and Ferreira (2017), which deals concurrently with all sanitation services in the Northeast and Rio Grande do Norte until 2017, and Dantas et al. (2017), which looks at solid waste in Caicó/RN - which was given greater focus because it is the regional center.

The documentary research covered the National Basic Sanitation Policy (Brazil, 2007), Plansab (Brazil, 2013; 2019) and the New Legal Framework (Brazil, 2020) in order to understand the principles that have historically guided the sector in this country.

In addition, to gather secondary data, in September 2023, the National Sanitation Information System (SNIS, 2021a;b;c;d) was consulted regarding urban sanitation system coverage rates, water distribution losses, sewage collection and treatment, the recovery of recyclable materials and households at risk in the cities of the Seridó potiguar in 2021.

Although this is the main database on the sector at a national level, certain municipalities in the area analyzed have not made their data available. Thus, the lack of information, especially on the type of sewage treatment in the Seridó, was to some extent covered by the National Basic Sanitation Survey (IBGE, 2017), whose database was consulted in November 2023.

With regard to field research, in order to obtain primary data, on-site observations were made of the dump in the municipality of Lagoa Nova and members of the local waste pickers' association were interviewed. It should be noted that this object and the actions carried out by this institution are hidden by the declared indices and have therefore been highlighted here.

It should be noted that all this data was analyzed in conjunction with political decisions and actions in this sector, on a national, regional and municipal scale. Thus, the rates of access to sanitation systems in the Seridó are permeated by processes, decisions and actions that encompass other scales and other periods.

3 RESULTS AND DISCUSSIONS

It is understood that the rates of urban basic sanitation coverage reflect aspects of the local, regional and national situation. Similarly, Britto et al. (2012) warn that the Brazilian state, during Planasa, was heavily involved in water supply, which would have contributed, among other factors, to disparate rates of access to sanitation systems across the country.

This impasse would continue until 2021, including on the scale of the Seridó. In this regard, there were disparate rates, with water supply being the sanitation system that came closest to universalization in this region, reaching coverage of over 90% in 22 of its 24 cities (Table 01) (SNIS, 2021a).

Table 01 – Indices relating to water supply in the Seridó Potiguar (2021)

Cities	Urban coverage*	Losses and distribution **
Acari	100	37,2
Bodó	95,35	32,93
Caicó	100	45,72
Carnaúba dos Dantas	100	51,43
Cerro Corá	100	28,39
Cruzeta	100	27,95
Currais Novos	86,19	44,92
Equador	100	29,31
Florânia	100	21,51
Ipueira	100	26,02
Jardim de Piranhas	100	52,93
Jardim do Seridó	100	24,39
Jucurutu	100	28,26
Lagoa Nova	91,74	12,06
Ouro Branco	100	38,84
Parelhas	100	38,65
Santana do Seridó	100	42,51
São Fernando	100	28,75
São João do Sabugi	100	46,25
São José do Seridó	72,36	33,18
São Vicente	100	8,35
Serra Negra do Norte	100	38
Tenente Laurentino Cruz	100	14,53
Timbaúba dos Batistas	100	24,75

Source: SNIS (2021a).
Prepared by the authors, 2023.
* Considers the urban population served and the population living in the municipality.
** Considers the volume of water produced and the volume consumed, the treated water imported and the service involved.

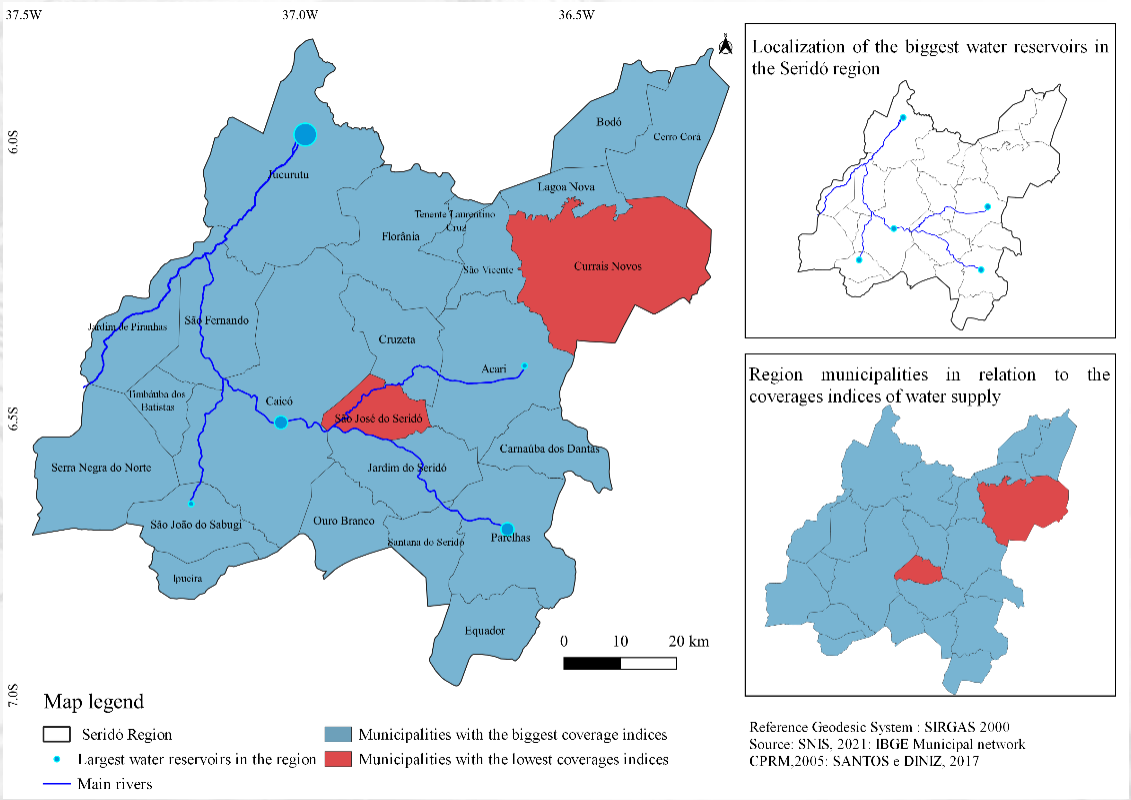
Among the cities that have achieved universalization of this sanitation system (Table 01), the success of Serra Negra do Norte stands out, which is the only one in this area to provide drinking water and sewage services independently (Figueiredo; Ferreira, 2017).

The local government has achieved universalization of both systems (SNIS, 2021a; b). However, Table 01 shows that the provision of drinking water has a significant distribution loss: 38%. This must be observed and reversed by the municipal initiative in order to guarantee more effective service to its population.

It should be noted that there are other cases in which access to the general water network has been universalized, such as in Jardim de Piranhas and Carnaúba dos Dantas, but there have been significant losses in the distribution of this network: 52.93% and 51.43%, respectively (Table 01) (SNIS, 2021a). This loss requires much more availability of this natural resource, which is already scarce in the Seridó potiguar.

The physical and natural conditions of this region, with low rainfall and a high evaporation rate, contribute to a difficult water situation, in which reservoirs (Figure 02) represent another possibility for the Seridó population to have access to water.

Figure 02 – Spatialization of water reservoirs in the Seridó Potiguar (2021)



Source: Santos and Diniz (2017); SNIS (2021a).

The Figure 02 shows the five largest reservoirs in Seridó: the Oiticica Dam (around 556,000,000 m³) and the Boqueirão (85,012,750 m³), Itans (81,750,000 m³), Santo Antônio (or Sabugi) (65,334,880 m³) and Marechal Dutra (or Gargalheiras) (44,421,480 m³) dams (Santos; Diniz, 2017) - three of which are located in the southern part of the region.

Furthermore, urban water supply coverage in Currais Novos (86.19%) and São José do Seridó (72.36%) is the worst in the region, respectively (Figure 02) (SNIS, 2021a). These figures show that the number of connections to the general network is lower than the number of households and buildings in both places and, as a result, the negligence of the municipal authorities in expanding this network.

In general, however, the water supply situation (Table 01) in the Seridó potiguar differs greatly from the rates of sanitation. The latter system recorded a more fragile overall picture, with much lower rates (Table 02).

Table 02 – Indices for sanitation in the Seridó Potiguar (2021)

Cities	Urban coverage*	Treated sewer colleted**
Acari	100	100
Bodó	-	-
Caicó	24,51	100
Carnaúba dos Dantas	-	-
Cerro Corá	83,18	100
Cruzeta	99,66	0
Currais Novos	71,19	100
Equador	-	-
Florânia	100	100
Ipueira	-	-
Jardim de Piranhas	33,1	100
Jardim do Seridó	69,54	2,23
Jucurutu	35,85	100
Lagoa Nova	66,31	100
Cities	**Urban coverage***	**Treated sewer colleted****
Ouro Branco	100	0
Parelhas	100	100
Santana do Seridó	100	100
São Fernando	99,71	77,4
São João do Sabugi	60,85	100
São José do Seridó	84,15	100

São Vicente	-	-
Serra Negra do Norte	100	100
Tenente Laurentino Cruz	-	-
Timbaúba dos Batistas	-	-

Source: SNIS (2021b).
Prepared by the authors, 2023.
* Considers the urban population served and the resident population in the municipality.
** Considers the volumes of sewage collected, treated, raw sewage imported, imported sewage treated at the importer's facilities and exported sewage treated at the importer's facilities.
- No information.

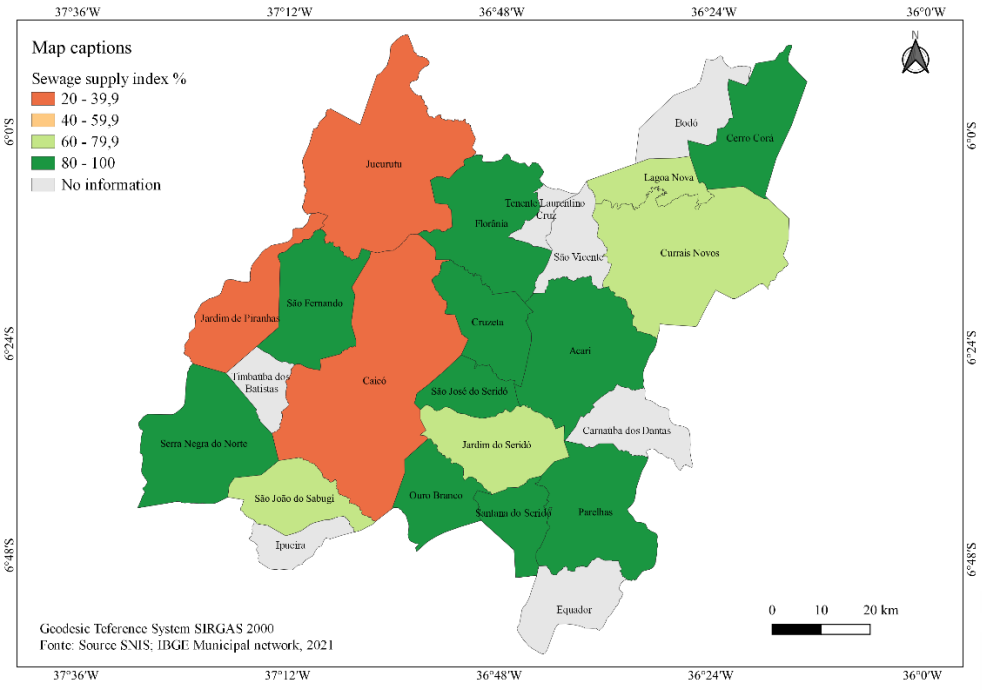
It was found that only 06 (25%) of the cities in the Seridó have achieved universalization of this service. In addition, 13 (54.16%) cities in this region treat all the sewage collected (Table 02) (SNIS, 2021b) - attesting to the fragility of this sanitation system.

Therefore, this service network has reduced coverage in the area analyzed. Furthermore, according to the National Basic Sanitation Survey (IBGE, 2017), only three of these towns receive primary sewage treatment[1] (Carnaúba dos Dantas, Serra Negra do Norte and Timbaúba dos Batistas) and another 10 receive secondary treatment (Acari, Caicó, Currais Novos, Florânia, Jucurutu, Lagoa Nova, Parelhas, Santana do Seridó, São Fernando and São José do Seridó).

As a result, no town in the Seridó potiguar uses tertiary sewage treatment - which significantly reduces contamination of water bodies and groundwater. As a result, this system receives only partial treatment of waste, as well as inefficient coverage, especially in the western part (Figure 03).

[1] Primary treatment removes suspended, settleable and floating solids. In the next phase, the organic load is oxidized by the action of microorganisms, while tertiary treatment removes pollutants such as nutrients, pathogens, as well as dissolved or suspended inorganic solids (IBGE, 2020).

Figure 03 – Spatialization of urban sanitation coverage in the Seridó potiguar (2021)



Source: SNIS (2021b).

There was greater negligence on the part of the municipal authorities, especially in Caicó (24%), Jardim de Piranhas (33.1%) and Jucurutu (35.85%) (Figure 03). In these places, greater coordination is needed, especially in terms of expanding the general network (SNIS, 2021b).

It should be emphasized that the disparities between the coverage of sanitation systems in Brazil also stem from the partial and compartmentalized conceptions of Planasa. Insoja (2014) points out that the actions resulting from this plan were not as successful in terms of sewerage, nor were public policies designed for rainwater drainage and solid waste.

Galvão Junior (2009) adds that the problem of basic sanitation in this country is compounded by the lack of coordination between the sectoral policies of the states and municipalities. In addition, Rezende and Heller (2008) state that, after Planasa, many states remained silent on basic sanitation, neglecting their obligations to the local population and to these services, relying on the existence of state companies.

In the state of Rio Grande do Norte, there is the Companhia de Águas e Esgotos do Rio Grande do Norte (Caern), which is responsible for providing these systems in several municipalities[2]. However, it should be observed that the concession of these services to the aforementioned company does not exempt the state of Rio Grande do Norte or the municipal

[2] As far as the Seridó is concerned, all of them have granted water supply services to this company. However, only 11 (45.83%) cities have been awarded sanitation services.

government from their duty in this sector and should not materialize in partial access to sanitation (Table 02).

In this sense, the data on sanitation systems in the Seridó allows us to infer the negligence of the Brazilian state, at municipal level, which ranges from providing information on sewage (Table 02) to its provision.

The exception is water supply, which had the data available by all the cities in this area and recorded the best urban service rates in 2021 (Table 01), getting closer to universalization - a principle advocated by Plansab (Brazil, 2013; 2019) and the New Legal Framework for Basic Sanitation (Brazil, 2020). In the Seridó, the second sanitation system to come close to this principle was solid waste collection and management (Table 03).

Table 03 – Solid waste indices in the Seridó potiguar (2021)

Cities	Urban coverage*	Recovery rate**
Acari	100	0
Bodó	100	12,3
Caicó	100	0
Carnaúba dos Dantas	98,04	0
Cerro Corá	100	0,6
Cruzeta	-	56,2
Currais Novos	99,67	35,7
Equador	100	2,3
Florânia	100	-
Ipueira	91,6	0
Cities	**Urban coverage***	**Recovery rate****
Jardim de Piranhas	99,55	0
Jardim do Seridó	100	2
Jucurutu	-	0
Lagoa Nova	45,31	0
Ouro Branco	100	0
Parelhas	100	5
Santana do Seridó	100	-

São Fernando	84,6	-
São João do Sabugi	100	1,8
São José do Seridó	100	50
São Vicente	-	-
Serra Negra do Norte	100	6,8
Tenente Laurentino Cruz	-	-
Timbaúba dos Batistas	-	-

Source: SNIS (2021c).
Prepared by the authors, 2023.
* Considers the urban population served and the population living in the municipality.
** Considers the total amount of recyclable materials recovered, the amount of household waste (RDO) and public waste (RPU) collected by public and private agents, the amount collected in selective collection carried out by associations or cooperatives of waste pickers in partnership with/supported by the municipality and the amount of RDO and RPU collected by other agents.
- No information.

In 2021, urban solid waste collection service rates were higher than 90% in 17 Seridó cities (Table 03). However, the situation of this system in Lagoa Nova (45.31%) and São Fernando (84.6%) differs greatly from the others in the region (SNIS, 2021c).

In addition, Table 03 shows that in eight cities in the Seridó, the municipal authorities declared a zero recovery rate for recyclable materials (SNIS, 2021c). However, it was found on site that Lagoa Nova has an association of waste pickers (Figure 04), which is part of the Recicla Seridó Network.

Figure 04 – Materials recycled and pressed by the Lagoa Nova/RN Waste Pickers' Association

Source: Authors' collection, 2023.

According to the interview conducted at this site, 13 citizens recycle materials such as cardboard, glass, plastics and aluminum (Figure 04) and sell them directly and indirectly every 3 months. This is an important initiative that turns solid waste into a source of income for these individuals.

These citizens emphasized the importance of the 250 reais in aid provided by the municipal government, in addition to a basic-needs grocery package - minimally mitigating their fragile socio-economic condition.

Thus, in 2023, an initiative was registered in Lagoa Nova, which seeks to recover and recycle various materials and which was omitted from the indices declared to SNIS (2021c) (Table 03).

Even so, this problem requires more action from Lagoa Nova's public government to expand the area covered by collection and recycling initiatives and the support given to the agents involved, as well as abolishing the local landfill (Figure 05).

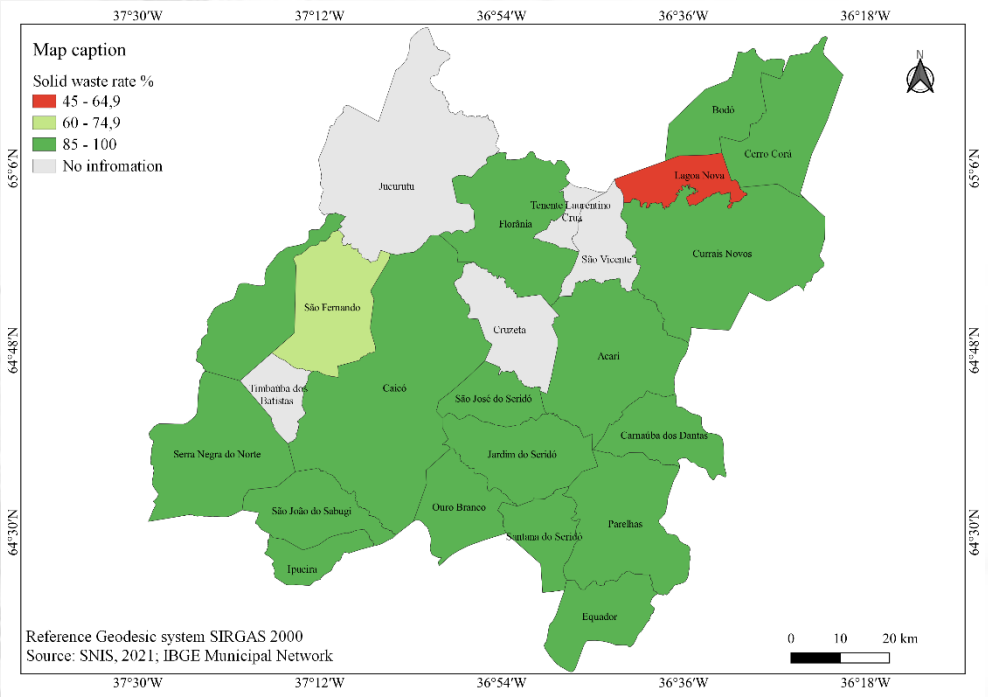
Figure 05 – Lagoa Nova landfill (2023)

Source: Authors' collection, 2023.

However, the existence of landfills in the Seridó, which has been concealed by the system's indices, is not restricted to this town (Figure 05). In 2016, the Federal Public Prosecutor's Office launched a public civil action against 25 municipalities (24 in the Seridó, in addition to Santana dos Matos), the Seridó Regional Solid Waste Consortium, the National Health Foundation (FUNASA) and the state government (Brasil, 2016).

It is therefore essential that the cities in this region seek to implement universal access to solid waste collection, abolishing their landfills, expanding the collection and treatment network, as well as encouraging associations and initiatives aimed at recovering recyclable materials. In addition, it is necessary to reverse the lack of availability of information, which marks a number of cities in this area (Figure 06).

Figure 06 – Spatialization of urban solid waste coverage in the Seridó potiguar (2021)



Source: SNIS (2021c).

The municipalities of Cruzeta, Jucurutu, São Vicente, Tenente Laurentino Cruz and Timbaúba dos Batistas did not provide information on this system (Figure 06). It should be pointed out that misinformation about the sanitation systems in a municipality compromises the adaptation of new public policies to the local reality.

Diagnoses of current demands and the current conditions in which these services are provided, as well as estimates of future demands, are jeopardized by the indifference of the municipal public authorities when it comes to gathering and providing information.

It is worth noting that the absence of data in São Vicente, Tenente Laurentino Cruz and Timbaúba dos Batistas compromises the provision of this system (Figure 06), in addition to having included sewage and rainwater drainage (Tables 02, 03 and 04).

Despite this, the analysis of solid waste management in the Seridó also revealed the existence of political articulations for the construction of another object: the sanitary landfill, which will meet regional demands. This object will be built in the municipality of Caicó, as

one of the actions of the Intermunicipal Multifunctional Consortium of the Seridó Region (CIM Seridó), which will contribute, above all, to actions aimed at the final destination of waste (Rio Grande do Norte, 2021).

The landfill will be an important step forward for the sector, especially in Caicó, as it will replace the municipality's landfill. As for the latter, Dantas et al. (2017) point out that it receives little attention from the local government and is located in a higher area than the surrounding ones, contributing to the spread of waste through wind, rainfall and/or gravity.

Furthermore, the current government of Rio Grande do Norte, through Fátima Bezerra, admits the importance of the landfill for the proper final disposal of these items, as well as for the health and quality of life of the population in the surrounding area (Rio Grande do Norte, 2021).

On the other hand, rainwater drainage in the Seridó Potiguar was the most fragile sanitation system in this area, either because of the low rates or the unavailability of information (Table 04). This proves that this service is not observed by the municipal authorities, even though it is such an important sanitation component for the safety of individuals.

Table 04 – Rainwater drainage rates in the Seridó Potiguar (2021)

Cities	Underground channels*	Homes at risk**
Acari	0	4,6
Bodó	12,3	6,7
Caicó	0	1
Carnaúba dos Dantas	0	0
Cerro Corá	0,6	2
Cruzeta	56,2	0,3
Currais Novos	35,7	10,1
Equador	2,3	0
Florânia	-	2,8
Ipueira	0	0
Jardim de Piranhas	0	1
Jardim do Seridó	2	1,3

Cities	Underground channels*	Homes at risk**
Jucurutu	0	0,5
Lagoa Nova	0	1,6
Ouro Branco	0	0
Parelhas	5	0
Santana do Seridó	-	6,1
São Fernando	-	-
São João do Sabugi	1,8	0
São José do Seridó	50	0
São Vicente	-	-
Serra Negra do Norte	6,8	0
Tenente Laurentino Cruz	-	-
Timbaúba dos Batistas	-	-

Source: SNIS (2021d).
Prepared by the authors, 2023.
* Considers the urban population served and the population living in the municipality.
** The drainage and rainwater management system is made up of various objects. We chose to analyze access to underground channels.
- Lack of information.

The negligence of public authorities is reflected in the rates of urban provision of this service, considering that 14 (58.33%) cities in the Seridó region reported rainwater drainage coverage by underground channels of less than 10% (Table 04) (SNIS, 2021d).

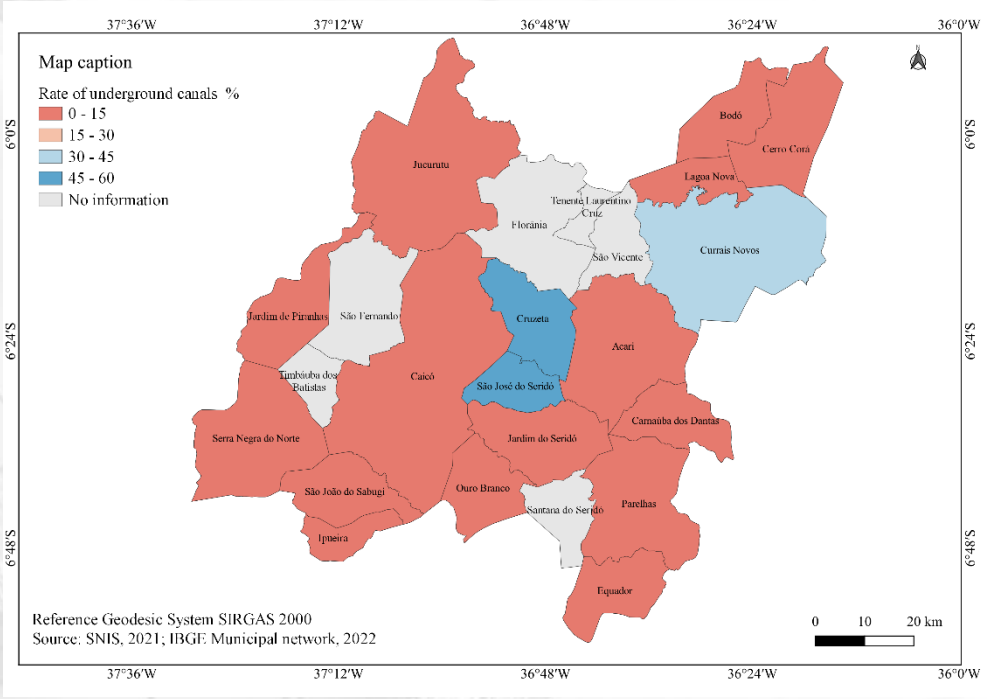
In addition, the cities in which this rate was zero stand out: Acari, Caicó, Carnaúba dos Dantas, Ipueira, Jardim de Piranhas, Jucurutu, Lagoa Nova and Ouro Branco (Table 04) (SNIS, 2021d). This index represents the extent to which this sanitation system is kept off the agenda of the public authorities, which eventually acts on an emergency basis.

It should be noted that when rainwater drainage is compromised, flooding - included in the variable evaluated by SNIS (Table 04) - can occur, as well as flooding (with rainwater accumulating in the streets) and torrents (a large volume of water that runs off quickly after rainfall) (Ministry of Planning and Budget, 1998).

From this perspective, there were households at risk of flooding in this region (Table 04), with the city of Currais Novos (10.1%) standing out as having the greatest socio-spatial vulnerability in the area. On the other hand, this city had the third highest rate of underground

channels for rainwater drainage in the Seridó: 35.7%. Only Cruzeta (56.2%) and São José do Seridó (50%) achieved higher rates (Figure 07).

Figure 07 – Urban coverage rate of public roads with networks or underground channels for rainwater drainage in the Seridó potiguar (2021)



Source: SNIS (2021d).

Figure 07 shows that this was the sanitation system with the worst urban coverage rates in Seridó Potiguar in 2021 (SNIS, 2021d). This confirms the negligence and omission of the state at municipal level, as well as the verticalization of political decisions and omissions at national level.

In this case, it is noteworthy that Planasa did not foresee effective actions regarding rainwater drainage, nor did it formally recognize it as one of the sanitary components (Britto et al., 2012). This delay and neglect, at a national level, is still reflected in the low levels of rainwater drainage by underground channels in 15 cities in the Seridó potiguar (Figure 07).

At a national level, the compromise of this system contributed - along with other factors, such as the scattering of garbage on public roads and the subsequent obstruction of drains - to 218,400 Brazilians becoming homeless or displaced in 2020 (Ministry of Regional Development, 2021). This is proof of the importance of rainwater drainage for the safety of citizens and the absence of the state when it comes to causes related to this service.

As a result, the Brazilian state has been historically indifferent to sanitation systems, which has become more vertical, reaching the municipal level of management as well, through the indifference of public authorities in the cities of the Seridó potiguar to the sector.

However, it is necessary for the water supply, sewage collection, solid waste and rainwater drainage networks to be expanded and/or renovated, given the coverage rates of these services and the losses recorded during their provision, especially with regard to drinking water.

It is also necessary to build and/or install new sanitary objects, such as: water reservoirs, sewage treatment plants, drainage channels and that the region's sanitary landfill be implemented. It should be reiterated that the installation of these objects should encourage a more equitable territorial distribution.

Thus, the nuances of the local reality must be taken into account (i.e. urban coverage and the technique used to provide sanitation systems, the availability and location of sanitation facilities, the capital available and the needs that remain) in order to achieve the universalization of this right throughout the Seridó potiguar through new public policies.

4 FINAL CONSIDERATIONS

The analysis of basic sanitation in the Seridó in Rio Grande do Norte in 2021 revealed that, among its components, urban water supply was the sanitation system with the best coverage rates.

On the other hand, rainwater drainage and management was the sanitation service with the lowest urban coverage in the region, which reinforces the extreme fragility of this service in the Seridó. In addition, this sanitation service had the least amount of information available on the National Sanitation Information System. Therefore, misinformation is another major challenge for universal access to basic sanitation in the Seridó, since it compromises the current diagnosis and future demands in these cities.

The municipal authorities of São Vicente, Tenente Laurentino Cruz and Timbaúba dos Batistas are the ones that have the most to do, since they have not disclosed the information to SNIS. These cities only provided data on water supply. The behavior of these city halls is one of disregard for the sector and for the health of the local population, given its relationship with basic sanitation.

This problem is also the result of the Brazilian state's failure to recognize solid waste and rainwater drainage systems as components of basic sanitation, guiding policies and actions to improve them.

Thus, the Brazilian state has contributed to the unequal rates between sanitation services and social classes, since, from the outset, it has privileged the elite's access to sanitation objects, to the detriment of the poorest; it has prioritized the largest cities, neglecting small and medium-sized cities - which include those in the region analyzed - and has praised sanitation actions focused on water supply, to the detriment of other sanitation services.

It is therefore necessary for public policies on basic sanitation to be reviewed, admitting and mitigating the discrepancies in the rates of service to sanitation services, giving priority to serving the poorest citizens, who live in urban peripheries.

It is therefore essential to expand the water supply network, in addition to installing new reservoirs or new adductor systems to ensure better distribution of this resource. As for the collection and handling of solid waste, this should be expanded, in addition to the abolition of dumps throughout the Seridó - which should be replaced by sanitary landfills - guaranteeing more efficient and adequate service, even though these systems have recorded the best rates in the sector in the Seridó potiguar.

As far as sewage and rainwater drainage systems are concerned, expanding their coverage becomes even more urgent, given such negligence and partial access to these sanitation systems, as the indices have shown. The first of these services requires the implementation of new treatment plants, which cover the 11 cities in the Serrano region where this process does not take place, while the other cities require tertiary level treatment - not yet achieved in the entire region analyzed.

Finally, rainwater drainage in the Seridó potiguar requires the implementation of new public policies that guarantee a greater number of underground channels, adequate paving of public roads and that consider and prioritize areas with homes at risk. In this case, not just in terms of flooding, but floods and torrents.

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