

SITUATIONAL DIAGNOSIS OF BASIC SANITATION PLANNING IN THE UPPER WEST REGION OF RIO GRANDE DO NORTE

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Abstract

This article examines the development and implementation of Municipal Basic Sanitation Plans (PMSB) in the Upper West Region of the Brazilian Northeastern state of Rio Grande do Norte. The investigation reveals that, despite the legal requirement for PMSB, many municipalities encounter significant challenges, including a dearth of trained personnel and financial resources, insufficient public engagement, and the absence of a unified information system for basic sanitation policy. Moreover, the lack of budget provisions for executing the actions outlined in the plans was identified as a critical issue. The article concludes that it is essential to fortify planning processes, ensure public participation, furnish the requisite technical and financial capacity, integrate basic sanitation actions into municipal budgetary frameworks, and address the political disarticulation of small municipalities.

Keywords

Public Management; Public Policies; Planning; Municipal Basic Sanitation Plans; Regional Development.

DIAGNÓSTICO SITUACIONAL DO PLANEJAMENTO EM SANEAMENTO BÁSICO NO ALTO OESTE POTIGUAR

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Resumo

Este artigo analisa o processo de elaboração e de implementação dos Planos Municipais de Saneamento Básico (PMSB) no Alto Oeste Potiguar. A pesquisa mostra que, apesar de a legislação exigir a elaboração dos PMSB, muitos municípios enfrentam desafios significativos, incluindo a escassez de pessoal capacitado e de recursos financeiros, além da falta de envolvimento da sociedade e da inexistência de um sistema de informações unificado sobre a política de saneamento básico. Adicionalmente, a falta de previsão orçamentária para execução das ações traçadas nos planos foi um fator crítico identificado. O artigo conclui que é necessário fortalecer os processos de planejamento, garantir a participação social, assim como a capacidade técnica e financeira necessária, e integrar as ações de saneamento básico nos instrumentos orçamentários municipais, além de buscar combater a desarticulação política dos pequenos municípios.

Palavras-chave

Gestão Pública; Políticas Públicas; Planejamento; Planos Municipais de Saneamento Básico; Desenvolvimento Regional.

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Introduction

Basic sanitation constitutes a crucial indicator of urban and regional development, serving as a tool for mitigating the adverse impacts arising from human activity, aiming at health promotion, reducing the population's exposure to generated waste, and controlling detrimental effects on well-being (Miranda, 2022).

In 2010, the United Nations (UN) formally recognized access to safe water and basic sanitation as an inalienable human right (Junho *et al.*, 2021). Since 2007, Brazil has been committed to achieving universal access to four essential sanitation services: (i) safe drinking water supply, (ii) sewerage, (iii) solid waste collection and disposal, and (iv) rainwater management (Brasil, 2007). However, a study by Figueiredo and Ferreira (2017) underscored the ongoing precarious conditions in the Brazilian Northeastern state of Rio Grande do Norte (RN) regarding sewage collection and treatment, as well as solid waste management, despite universal water supply coverage. Moreover, an analysis by Alves Filho (2016) covering the 2010-2016 period revealed that only a limited number of municipalities had successfully developed and implemented their Municipal Basic Sanitation Plans (PMSB).

Normative Act No. 11.445/2007 (Brasil, 2007)¹, which regulates basic sanitation in Brazil, links the achievement of integral and the universal service goals to

Updated in 2020, through Law No. 14,026. BRASIL. Law No. 14,026, of July 15, 2020 updates the legal framework for basic sanitation and amends Law No. 9,984, of July 17, 2000, to grant the National Water and Basic Sanitation Agency (ANA) the authority to issue reference standards for sanitation services, Law No. 10,768, of November 19, 2003, to change the name and duties of the position of a Water Resources Specialist, Law No. 11,107, of April 6, 2005, to prohibit the provision through program contracts of the public services referred to in Article 175 of the Federal Constitution, Law No. 11,445, of January 5, 2007,

managerial practices of planning and social organization. This is accomplished through the development of municipal policies and a municipal basic sanitation plan that reflect the aspirations, characteristics, and specificities of local and regional areas (Nogueira, 2019). Drawing up these documents has the potential to enhance population development and quality-of-life indexes across a variety of regions, since it is related to themes such as public health, the environment, hygiene, landscape maintenance, and generating well-being (Ataíde, 2012; Trata Brasil, 2012; Funasa, 2014).

Implementing PMSB is a prerequisite for municipalities to access federal investments that enable the execution of basic sanitation initiatives. However, by 2016, only 28% of Brazilian municipalities had finalized their respective documents (Miranda *et al.*, 2016). Similarly, in the state of Rio Grande do Norte, not all municipalities had completed their documents. Rodrigues *et al.* (2018) reported that in 2018, over 90% of the state's municipalities had still to complete their plans, with only 50% having initiated the process.

The present study was developed based on the relationship between basic sanitation and regional development, considering the need to finalize plans, in order to implement actions, and the importance of diagnosing the role of planning in public policies across the territory. The primary objective of this study was to conduct a situational diagnosis of PMSB planning and implementation in the municipalities that make up the Upper West Region of Rio Grande do Norte. Specifically, it sought to identify the key dynamics that have accelerated or hindered the preparation of documents, in order to understand the challenges faced in the trajectory between planning and executing the actions foreseen in the municipal plans.

In preparation for this article, a descriptive-exploratory study with a qualitative-quantitative approach was conducted, developed with the support of a literature and documentary review, and field research. The literature review was conducted using the Narrative Literature Review method (Toledo; Góngora; Bastos, 2017), drawing from the SciELO, Google Scholar, Capes Periodicals, and Scopus databases. Studies from 2007 onwards were selected, using Law No. 11.445/2007 (Brasil, 2007) as a temporal reference.

to improve the structural conditions of basic sanitation in the country, Law No. 12,305, of August 2, 2010, to address the deadlines for the environmentally adequate final disposal of waste, Law No. 13,089, of January 12, 2015 (Metropolitan Statute), to extend its scope to microregions, and Law No. 13,529, of December 4, 2017, to authorize the Union to participate in a fund with the exclusive purpose of financing specialized technical services. *Diário Oficial da União* [Official Gazette of the Union]: Brasília, DF, July 16, 2020. Available at: <https://www.in.gov.br/en/web/dou/-/lei-n-14.026-de-15-de-julho-de-2020-267035421>. Accessed on: October 20, 2023.

The documentary research was conducted using the official pages and gazettes of the municipalities listed for the study and on the National Information System for Water and Sanitation Data (SNIS). This stage was divided into two phases. First, a simple Google search was used to identify the existence of PMSBs. Subsequently, a more targeted search was conducted on the official municipal pages and gazettes. The documentary phase took place in December 2022 and was repeated in April 2023 to ascertain the availability of updated documents. Following an initial search, official municipal websites were accessed using the search terms “basic sanitation” or “municipal plan” in order to identify any relevant information. In the second stage, the SNIS Historical Database was used, with information referring to the year 2021 (SNIS, 2021), provided by the municipalities themselves, observing the policy indicators and PMSB. To complement and support these findings, an attempt was made to confirm the data obtained consulting Infosanbas (2023), an unofficial information platform on basic sanitation that gathers and compiles the data reported in the SNIS (2021) by the municipalities themselves.

The field research was conducted through a structured questionnaire, using Google Forms, sent to managers or technicians responsible for developing the PMSB in each of the 37 participating municipalities. As the research involved human subjects, it was submitted to the Research Ethics Committee, and adhered to all the ethical guidelines outlined by the National Health Committee in Resolution 466/2012, receiving approval under number 5.804.995.

The article focuses on the theme of planning in basic sanitation, examining the dynamics involved in the implementation (or lack thereof), the reasons for delays and the potential post-implementation impacts. It begins from the assumptions that consolidated PMSB has resulted from substantial, organized public participation; that the theme is directly aligned with sustainable development and the 2030 Agenda – although the study primarily focuses on regional development and public management –; and that the result of the process and the research may contribute to a greater understanding of public policies in this sector in the selected territory, as well as the challenges observed in the transition between planning and implementation (Ferreira *et al.*, 2023; UN, 2024).

This study is structured into this introductory section with the problematization and methodology, followed by the section entitled “Basic sanitation, planning, and regional development: a necessary debate”, providing the theoretical basis for the research. The section “Unveiling territories: basic sanitation planning in the Upper West Region of the State of Rio Grande do Norte” discusses and characterizes the study area, while the section entitled “An overview of developing the Municipal Basic Sanitation Plans in the Upper West Region of Rio Grande do Norte” synthesizes and discusses the study findings, culminating in the final considerations.

1. Basic sanitation, planning, and regional development: a necessary debate

In Brazil, the dynamics of city, territory, and regional development have unfolded in an unequal, disorderly fashion, primarily driven by industrialization and urbanization processes, compounded by the phenomenon of rural exodus. The rapid influx of migrants into urban environments has fueled the unplanned, improvised growth, resulting in territories marked by various social and environmental impacts (Campos; Branco, 2021).

The urban area of localities expanded rapidly, and the occupation process did not occur from planned action, in which the social and environmental conditions were considered, since this movement toward the centers was primarily motivated by economic reasons characteristic of the time (Martins, 2012). Souza (2015) presented a discussion on the impacts arising from the improvised occupation of territories, which, in addition to altering the urban landscape, introduced or exacerbated problems associated with the improper disposal of domestic waste within these areas.

The discussion on urban planning intensified as the population growth concentrated in areas that were not only unhealthy for habitation but also conducive to the spread of diseases, resulting in a decline in the quality of life (Santos *et al.*, 2018). This materialized in the Brazilian peripheral landscape, characterized by substandard settlements, slums, collective housing, and clandestine subdivisions, emblematic of the country's irregular housing (Heinig, 2021).

Planning, understood herein as a strategic, situational tool capable of conciliating actions across various, complex realities, can effectively integrate the perspectives of a wide range of social actors involved in identifying and addressing environmental problems (Lacerda *et al.*, 2012). For Reuter *et al.* (2020, p. 1), “[P]lanning allows one to meet the demands of a given reality, to transform and move it, to achieve the desired objectives”.

Given the discussion on the impacts caused by the dynamics of urban growth, the question of basic sanitation emerges as a social right (Brasil, 1988). By mitigating the impacts caused by human action, it promotes health and hygiene, distancing the population from any contact with generated waste and reducing the likelihood of detrimental effects on physical, mental and social well-being. Thus, basic sanitation is intrinsically linked to socioeconomic and regional development, as well as human development, given the perspective of fostering an environment conducive to the development of personal and professional activities (Miranda, 2022).

A significant portion of the scientific literature posits that regional advancement is contingent upon to the existence of effective planning within these regions, a process that must be participatory and developed with clear objectives.

Public participation is paramount in ensuring the efficiency of planning outcomes through monitoring and, moreover, to fostering the generation of ideas and securing a commitment to fulfilling the plan's content (Sen, 2000; Becker, 2003; Oliveira; Lima, 2003; Corrêa, 2015).

From this perspective, planning emerges as an indispensable tool for society, particularly given its pivotal role in development. Preserving landscapes and reducing sanitary, social, and environmental impacts resulting from the uneven, concentrated distribution and fixation of the population within urban areas are factors related to basic sanitation, which thus serve as a key indicator of developed areas (Silva, 2022).

The normative reference in the sanitation sector, Law No. 11.445/2007 (Brasil, 2007), establishes a direct link between sanitation actions and planning activities. Its core objective is to align infrastructure investments and increased coverage with the actual needs of the population, while also ensuring the sustainability of the actions and their feasibility within the financial and budgetary constraints.

The process of planning transcends mere predictive documentation, emerging as a comprehensive activity encompassing diagnosis, objective and goal setting, identification of strengths and weaknesses, informed decision-making, and crucially, guiding the execution of actions and investment.

Matus (1987; 1989) underscored situational strategic planning (SSP) as a distinctive approach to comprehending and interacting with the intricate challenges faced by public administrators, by incorporating the diverse perspectives of the involved actors and highlighting situational analysis (*id.*, 1989). This implies that the diagnostic phase, a pivotal component of SSP, transcends mere data accumulation; it constitutes a critical, reflective process of comprehending reality, encompassing its political, social, economic, and cultural facets (*id.*, 1987). Consequently, it is through this phase that key problems, their root causes, inter-relationships, and understanding stakeholder interests and strategies are determined. This planning modality also acknowledges uncertainties and conflicts, factors that significantly impact the efficacy of implemented measures. Thus, situational consideration evolves into a political analysis of reality, facilitating the identification of the involved actors, their interests, and their strategies of action (Huertas, 1996).

For Matus (1993), planning is an indispensable activity for management, responsible for guiding collective actions in search of the conciliation of individual and social conflicts. The planner, the individual responsible for managing the process of building the document, must take on the social responsibility of acting with the aim of reducing inequalities and promoting social equity (Nogueira, 2019)

The act of planning is related to the strategic distribution of elements and production factors across the territory, as well as the allocation of resources to achieve specific objectives following in-depth discussion (Cardoso, 1973). Matos and Gonçalves (2020) highlighted the precarious nature of the planning process across various sectors of society, since the State assumes a dominant role in decision-making. The fundamental reason for the failure of sectoral planning during the twentieth century (Haesbaert, 2010) was the historically low and tokenistic public participation in these processes, leading to an essentially unilateral State-driven approach.

Public participation is a mandatory component of planning basic sanitation in Brazil and must be included at every stage of developing the documents (Brasil, 2007). The goal is for the resulting plans to accurately represent the potential, needs, shortcomings, and unique particularities of both local and regional contexts.

In Brazil, the process of developing basic sanitation planning documents has been extended from 2007 to the present day. The 2007 normative standard set the initial deadline for completing the plans in December 2013. However, due to non-compliance by the municipalities, the deadline was postponed, every two years, until the final deadline of December 2022 (Brasil, 2020), which has now expired.

For this reason, research has been conducted in order to understand, from a local or regional perspective, the reasons why municipalities have tended not to meet deadlines nor even to initiate the work involved in constructing the Municipal Sanitation Plans (Alves Filho, 2016; Heinig, 2021; Lima, 2021; Silva; Fracalanza, 2022), based on different assumptions and reaching different conclusions.

In essence, research has highlighted several challenges that have hindered effective planning: limited public participation in the planning process, centralization by the managements in the server team, insufficient investment in training and guidance, a dearth of qualified technical staff, together with perceived political apathy. The importance of understanding the dynamics involved in the planning delay is demonstrated by the possibility of potentiating (or restricting) the benefits of sanitation in the localities. Organized, well-planned actions optimize the population's use of the services, address previously diagnosed problems and proactively deal with future challenges, in the short, medium and long term. The exclusion (or reduction) of actions carried out in an improvised manner is also crucial, underscoring the critical role of planning in this sector (Lisboa; Heller; Silveira, 2013).

The following research has adopted a diagnostic perspective as outlined in Rodrigues *et al.* (2018), identifying municipalities with either completed, ongoing or no PMSB. To broaden understanding, potential factors, obstacles, and circumstances that contribute to the delay in developing the plans have been investigated.

The study subsequently presents the findings of the proposed diagnosis, supported by responses from public officials involved in the basic sanitation planning process in the Upper West Region in the interior of Rio Grande do Norte, thereby contributing to an understanding of the dynamics inherent in developing the documents.

2. Unveiling territories: basic sanitation planning in the Upper West Region of the State of Rio Grande do Norte

The research was conducted in the Upper West Region of the State of Rio Grande do Norte, encompassing the microregions of Pau dos Ferros, São Miguel, and Umarizal, which collectively comprise 37 municipalities (Brazilian Institute for Geography and Statistics – IBGE, 1989). Despite an update in 2017, this regionalization remains in use and is disseminated by IBGE – Brazil’s official census agency. Moreover, studies and initiatives undertaken in the state of Rio Grande do Norte for implementing public policies have adopted this region as a framework for developing the Sustainable Development Plan for the Upper West Region (IICA, 2006) and the distribution of Regional Health Centers (Sesap/RN, 2016), thereby popularizing and empirically consolidating the area under its current designation. The study area (Figure 1) is located in Brazil’s Semi-Arid region and in the Apodi-Mossoró River basin, the second largest in the state of Rio Grande do Norte in terms of extension.

Given the established fact that the Northeast region is lagging behind in the development of its PMSB (Miranda *et al.*, 2016; Nogueira, 2019; Heinig, 2021) and considering that a survey revealed that over 90% of the municipalities in Rio Grande do Norte lacked a plan, with only half of these actively developing one (Rodrigues *et al.*, 2018), the aim of this study was to assess the situation of municipalities within the Upper West Region of Rio Grande do Norte.

This study has investigated the regulatory framework for the sanitation sector in Rio Grande do Norte, anchored in the Secretariat of the Environment and Water Resources (SEMARRH), with the aim of identifying either a state or regional policy or plan that could explain the delay in developing the necessary documents. However, no such policy or plan was found. Similarly, inquiries were made through the official channels at the Companhia de Águas e Esgotos do Rio Grande do Norte [the Rio Grande do Norte Water and Sewage Company] (CAERN), the state’s sanitation services concessionaire, to explore potential planning-related actions, but no response was received.

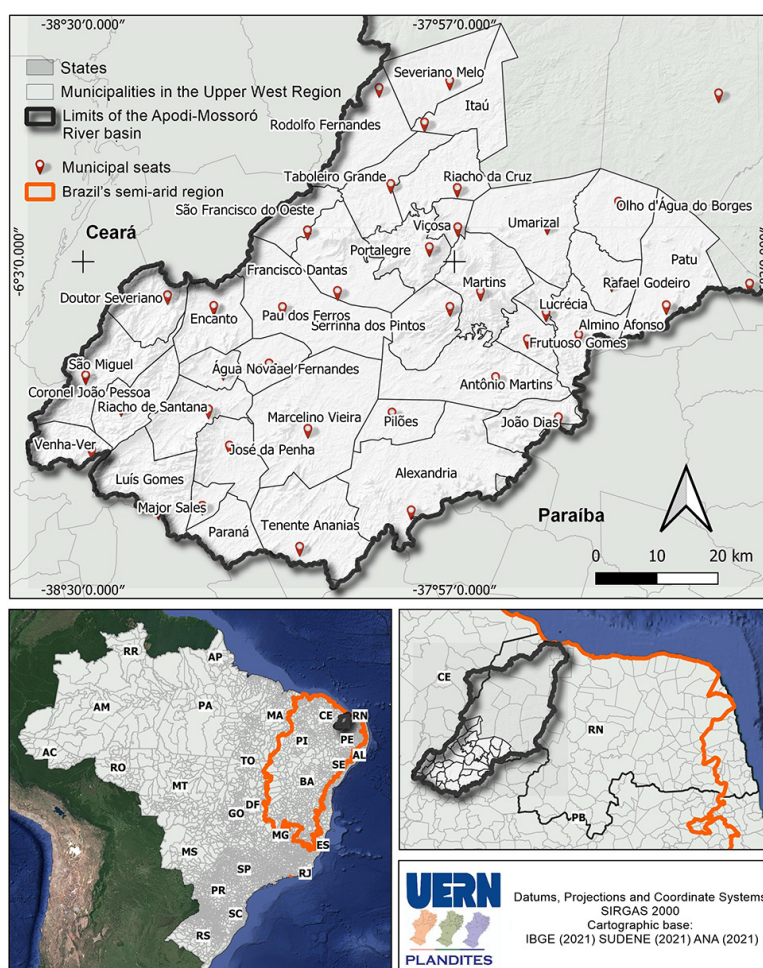


Figure 1. Location of the Upper West Region of the State of Rio Grande do Norte (2023)
 Source: Own elaboration (2023), based on IBGE (2021) and SUDENE (2021).

The legislation currently governing basic sanitation in the state remains that of 2004 (Rio Grande do Norte, 2004). In August 2017, a commission was established via Decree No. 27,250 (*ibid.*, 2017) to analyze, review and update the state policy within a forty-day timeframe from the date of its publication. Despite this mandate, once again, no subsequent publications related to this matter were identified for the purposes of this study.

With regard to the modifications resulting from the publication of the New Legal Framework for Sanitation (Rio Grande do Norte, 2021), the state instituted Water and Sewage Microregions, dividing the state territory into two microregions, the Central-West and the Coastal-Seridó, both integrated by the state and by the municipalities grouped through this regionalization.

The aim of this division was to assign the responsibilities for organizing, planning, regulating, and executing public water supply and sewerage services to these

two newly formed entities. Each microregional autarchy was to be constituted by the state governor, the mayors of each participating municipality, a technical committee, a participatory council, and a secretary-general (Rio Grande do Norte, 2021).

As participating municipalities, those lacking their own water supply and sewerage service ceded the provision of these services to the corresponding state agency. This should be officially regulated, which, however, due to the absence of such regulation, more closely resembles a consortium of municipalities. In most cases this is attributable to the lack of a physical and financial structure to provide these services themselves (Paiva; Leitão, 2022)

The absence of an updated, revised document that regulates and sets new objectives and goals for the universalization of basic sanitation in the state of RN is a warning sign that mirrors the procrastination also observed in municipalities regarding the regulation, review, and planning of similar actions (Leite; Alves, 2021).

For the study area, the Rio Grande do Norte Intermunicipal Public Consortium (COPIM) has partnered with the National Health Foundation (FUNASA) to develop the PMSB. Its official website provides information on the participating municipalities which are either in the process of developing or have presented a completed document. A significant number of these municipalities involved are located within the study territory (COPIM, 2021), and their data is compared below.

Initial investigations into the existence of PMSB in the municipalities in the study area, using the methodological instruments, revealed inconsistencies between the data presented in the official sanitation information systems, on the official municipal websites and the availability of the documents, as detailed in Table 1.

Municipality	Infosanbas	Availability of document
Água Nova	No	-
Alexandria	Yes	-
Almino Afonso	No	-
Antônio Martins	No	-
Coronel João Pessoa	Yes	-
Doutor Severiano	Yes	-
Encanto	Yes	https://app.rios.org.br/index.php/s/G8byfcx9o8TRyxG?path=%2Fencanto-rn
Francisco Dantas	Yes	-
Frutuoso Gomes	No	-
Itaú	Yes	-
João Dias	Yes	-
José da Penha	No	-

Municipality	Infosanbas	Availability of document
Lucrécia	Yes	https://app.rios.org.br/index.php/s/G8byfcx9o8TRyxG?path=%2Flucrecia-rn
Luís Gomes	No	https://luisgomes.rn.gov.br/informa.php?id=486
Major Sales	No	-
Marcelino Vieira	No	-
Martins	No	-
Olho d'água dos Borges	No	-
Paraná	Yes	https://app.rios.org.br/index.php/s/G8byfcx9o8TRyxG?path=%2Fparana-rn
Patu	Yes	-
Pau dos Ferros	Yes	https://paudosferros.rn.gov.br/arquivos/2481/PLANO%20MUNICIPAL%20DE%20SANEAMENTO%20BASICO%20DE%20PAU%20DOS%20FERROS__2014_0000001.pdf
Pilões	Yes	-
Portalegre	Yes	-
Rafael Fernandes	Yes	https://drive.google.com/file/d/1q45VnJW-uQfM1K1NOrkvdRPBo_qVd3yJ/view?usp=sharing
Rafael Godeiro	Yes	-
Riacho da Cruz	Yes	-
Riacho de Santana	No	https://app.rios.org.br/index.php/s/G8byfcx9o8TRyxG?dir=undefined&path=%2Friacho-de-santana-rn&openfile=4552905
Rodolfo Fernandes	Yes	https://app.rios.org.br/index.php/s/G8byfcx9o8TRyxG?dir=undefined&path=%2Frodolfo-fernandes-rn&openfile=4565881
São Francisco do Oeste	Yes	-
São Miguel	No	-
Serrinha dos Pintos	No	-
Severiano Melo	Yes	-
Taboleiro Grande	Yes	-
Tenente Ananias	No	-
Umarizal	No	-
Venha-Ver	No	-
Viçosa	No	-

Table 1. Municipalities with information regarding the completion of the PMSB and the availability of documents (2023)

Fonte: Elaborado pelos autores (2023).

At this stage, a color system was adopted to categorize the municipalities. Municipalities highlighted in **red** lack any information regarding the plan or the accessible document on the date of the search. Those in **yellow** reported having a plan, although none were found. Municipalities in **light green** reported not having

a plan, despite related documents being identified during the document search. Lastly, entities in **dark green** reported having a plan and made their documents available for public access.

Of the 37 municipalities listed for this study, the BMSB of just 6 are fully accessible online, including all its products. Municipalities are periodically obligated to update sanitation data in the SNIS, reflecting their current situation. With regard to this, Infosanbas data reveals that while 20 municipalities reported having BMSB, no related publicly-available documents were found.

For other municipalities, no information is available on their completed BMSB. Preliminary searches revealed publications of laws enacted by the Legislative Power instituting the plan, but without providing public access to it. Officially, the non-publication of a developed, concluded and approved document implies its non-existence, thereby violating the publicity principle mandated by Law No 11.445/2007 (Brasil, 2007).

In this perspective, it is crucial to reflect upon the fulfillment of publicity actions in the Public Administration. Simply drawing up a document for guiding actions without ensuring public accessibility, would seem to yield limited results. In the specific case of the BMSB, the absence of the online plan hinders the population's ability to verify whether the document accurately addresses their true needs. Thus, a precarious situation is produced for control and public participation, pillars of the democratic society in which we live.

Of the 37 municipalities that make up the Upper West Region of Rio Grande do Norte, 22 took part in this study. Among the remaining municipalities, two reported having no plan and declined to complete the questionnaire, six were unable to identify a representative who could discuss basic sanitation or provide the necessary data and seven failed to respond to our attempted contacts, as detailed in Table 2.

Municipality	Participated	Did not respond to our contact	Unable to identify a representative	Unaware of either the existence or discussion
Água Nova				
Alexandria				
Almino Afonso				
Antônio Martins				
Coronel João Pessoa				
Doutor Severiano				
Encanto				
Francisco Dantas				
Frutuoso Gomes				
Itaú				

Municipality	Participated	Did not respond to our contact	Unable to identify a representative	Unaware of either the existence or discussion
João Dias			Yellow	
José da Penha	Green			
Lucrécia	Green			
Luís Gomes	Green			
Major Sales	Green			
Marcelino Vieira	Green			
Martins		Grey		
Olho d'água dos Borges	Green			
Paraná	Green			
Patu	Green			
Pau dos Ferros	Green			
Pilões		Grey		
Portalegre		Grey		
Rafael Fernandes	Green			
Rafael Godeiro	Green			
Riacho da Cruz		Grey		
Riacho de Santana	Green			
Rodolfo Fernandes	Green			
São Francisco do Oeste			Yellow	
São Miguel				Red
Serrinha dos Pintos				
Severiano Melo		Grey		
Taboleiro Grande		Grey		
Tenente Ananias	Green			
Umarizal				Red
Venha-Ver	Green			
Viçosa			Yellow	

Table 2. Results of the attempts to apply the research (2023)

Source: Own elaboration (2023).

Small municipalities – a common feature among those included in this study – typically face a shortage of skilled personnel for specific tasks, such as basic sanitation. In these municipalities, discussions related to such issues are often assigned to a variety of roles played by individuals from different departments with diverse responsibilities.

All municipalities included in this field of study are geographically located within the Apodi-Mossoró River Basin, which contains over 618 reservoirs, and for this reason, interacts with the positive and negative effects arising from the services of water management, sewage, waste, and other residues (Souza; Santos, Justo, 2016). Figure 2 presents data from the questionnaire correlating the documents developed and the river basin.

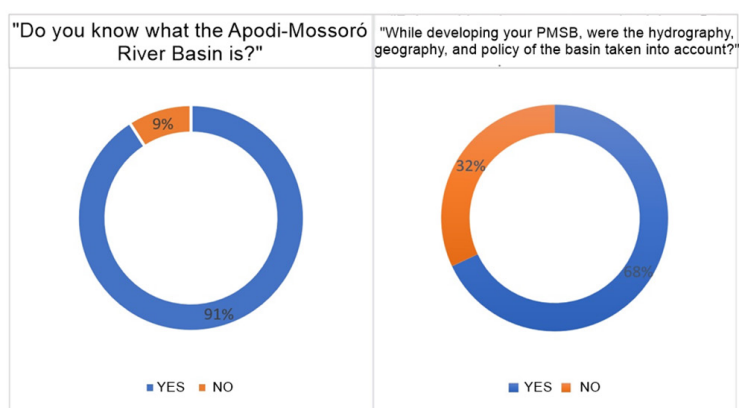


Figure 2. Knowledge on the existence of the Apodi-Mossoró River Basin and consideration of the debate for planning the PMSB (2023)

Source: Own elaboration (2023).

When investigating their basic knowledge on the existence and function of the basin, as well as the location of its constituent municipalities, twenty municipalities reported familiarity with the subject. Among these, 68% reported having considered the hydrology, geography, or policy of the basin during the development of the PMSB. The fact that the remaining municipalities disregarded this aspect may highlight a failure in the interplay between the factors that should be included in the related discussions. This is particularly relevant given the potential impacts of sanitation actions – or the lack thereof – on the indicators related to the basin, such as sewage residues and rainwater flowing into the water sources.

Figure 3 illustrates how the location of the municipalities in the Upper West Region of Rio Grande do Norte within the Apodi-Mossoró River Basin helps to visualize the potential impacts stemming from the supply capacity of sanitation services.

It is vital that sanitation management aligns with river basin management, since the improper disposal of solid waste and sewage, particularly domestic, makeshift and untreated, may potentially have a direct impact on the river basin. This includes contamination and pollution of the waterways and water sources within the territory, thus reinforcing the need for integrated management of the services.

Table 3 presents an overview of when each participating municipality initiated activities involving the development of PMSB. This includes its organizational setup, planning, information sharing, and the formation of study groups, as well as the completion date for the final document.

Municipality	Start date of the plan	Completion date of the plan
Água Nova	2020	2021
Alexandria	2018	Unconcluded
Almino Afonso	2017	2017
Coronel João Pessoa	2016	2016
Encanto	2017	2021
Frutuoso Gomes	2010	2022
José da Penha	2016	2021
Lucrecia	2018	2019
Luís Gomes	2017	2019
Major Sales	2014	2016
Marcelino Vieira	2016	2021
Olho d'água dos Borges	2015	Unconcluded
Paraná	2017	2019
Patu	2017	2022
Pau dos Ferros	2015	2016
Rafael Fernandes	2015	2021
Rafael Godeiro	2022	Unconcluded
Riacho de Santana	2017	2022
Rodolfo Fernandes	2019	2020
Serrinha dos Pintos	2017	2021
Tenente Ananias	2017	2022

Table 3. Start and completion dates of the PMSB in the surveyed municipalities

Source: Own elaboration (2023).

It may be observed that since 2017, there has been a growing trend towards organized management practices in the initial planning stages of documents mandated by current sanitation legislation. As problematized, despite deadlines set as early as 2013 (with 2017 initially marked as final), these have been consistently postponed².

2. The then President Jair Messias Bolsonaro signed Decree No. 10,203/2020 (Brasil, 2020) extending the deadline for completing the PMSB, given that, at the end of 2017, only 28% of Brazilian municipalities had completed the respective documents. The full report can be accessed at: <https://www.gov.br/pt-br/noticias/assistencia-social/2020/02/municipios-brasileiros-tem-ate-dezembro-de-2022-para-elaborar-planos-de-saneamento-basico>. BRAZIL. Decree No. 10,203 of January 22, 2020. Amended Decree No. 7,217, of June 21, 2010, which regulates Law No. 11,445, of January 5, 2007, which establishes national guidelines for basic sanitation. *Diário Oficial da União* [Official Gazette of the Union]: Brasília, DF, January 23, 2020. BRAZIL. Resource allocation. Brazilian municipalities have until December 2022 to develop Basic Sanitation Plans. February 10, 2020. Brasília, DF: Brazil Services and Information, 2020.

Even with the extended deadlines, it is evident that some municipalities initiated their organizational efforts only in 2020, coinciding with the year in which the sanitation legal framework was also reviewed. It should be emphasized that four municipalities have yet to finalize the implementation of their plans, and that the municipality of Frutuoso Gomes, the first to commence work, only managed to complete the process in 2022, suggesting potential disruptions to the planning timeline during this period. Other municipalities, such as Almino Afonso and Coronel João Pessoa, reported completing their documents in the same year as the initiative was taken.

It may be reflected, therefore, that planning is not merely a technical component, requiring solely the assembly skilled personnel; it is also political, since it involves the presentation of technical solutions for decision-making in this field, as well as the cultivation of a political climate receptive to the technical decisions of planning and, above all, to initiating the process (Corrêa, 2016).

Overall, among the municipalities participating in the research, eighteen had finalized their PMSB. Of the remaining, four stated that they were in the process of developing it, while two declined to participate in the survey because they did not have the document. Beyond this, the study also revealed that municipalities had encountered various challenges during the development stages.

The responses regarding this were categorized and grouped based on content analysis to facilitate result interpretation. The respondent municipalities identified various challenges, summarized in Table 4. As multiple challenges could be selected per response, the data is presented accordingly.

Category	Number of municipalities with indicator
Encountered no challenges	4
Encountered challenges, but did not specify	3
Shortage of skilled personnel/technical team	8
Public participation	6
Financial resources	6
Intersectoral engagement	4
Lack of supervision	1

Table 4. Categories of challenges indicated by municipalities when constructing their PMSB (2023)

Source: Own elaboration (2023).

Although most of the responses involved factors related to the shortage of skilled personnel and a qualified technical team, eighteen municipalities reported

that they had signed an agreement with FUNASA and the Universidade Federal do Rio Grande do Norte for consultations and support in the preparation. Nevertheless, few actually continued with this.

The Consórcio Público Intermunicipal do Rio Grande do Norte [Intermunicipal Public Consortium of Rio Grande do Norte] (COPIRN) contributed to the incentive to finalize the PMSB by providing guidance to municipalities. Notably, their official website indicated that the plans for 18 of the 37 municipalities included in this study had already been completed and approved. This included municipalities that did not respond to the questionnaire because they were unable to identify a person responsible for sanitation discussions within their administrative structure, highlighting a significant internal organizational challenge.

Therefore, in one of the questionnaire fields we requested the availability of links to access the PMSB when completed. The inconsistency among SNIS data, the information from the relevant municipal official gazettes, the official websites, the COPIRN page, and the data obtained through the questionnaire is one more factor that reinforces that the absence of a unified, regularly updated basic sanitation information system hampers accurate assessment of the current situation.

The data collected from the questionnaire corresponds to the documentary research conducted in the previous stage. Given that only eight documents were fully accessible to the public from the total, representing 21% of the studied territory, it becomes evident that 79% of the area still lacks completed documents, indirectly reaffirming the existence of obstacles and opposition to the completion of the plans.

The indication of challenges relating to the process of involving the public in planning is undeniably worrying. As Siedenberg and Allebrandt (2010) argued, planning ought to be the embodiment of society's collective will, allowing citizens to shape their own destiny through active participation in decision-making, thereby distancing itself from resignation and fostering the fortification of citizenship and democracy. According to Boisier (1995, p. 47, authors' translation):

First and foremost, regional development planning is a societal activity, in the sense of being a responsibility shared by several social actors: the State, of course, for various and well-known reasons, and the region itself, is a regional community, multifaceted, contradictory and diffuse at times, but a community, spatially specific and differentiated. Without the participation of the region, as a true social actor, regional planning consists only—as historical experience proves—of a top-down procedure for allocating financial or other resources among spaces arbitrarily or erroneously called “regions”.

Another point for discussion regarding the application of the questionnaire concerns the execution of the actions outlined in the plan. Planning, as an initial action, is intended to diagnose, establish goals and objectives, and study and foresee means of executing the actions (Chiavenato, 2014). Thus, there is little reason in undertaking it if there is no corresponding interest in implementing it.

The municipalities with completed planning instruments were investigated to determine whether any of the actions outlined in the document had already been implemented within the territory. Given the comprehensive scope of the document, which encompasses the entire range of sanitation services, composed of various activities involving the provision of services, the responses were varied, as organized below.

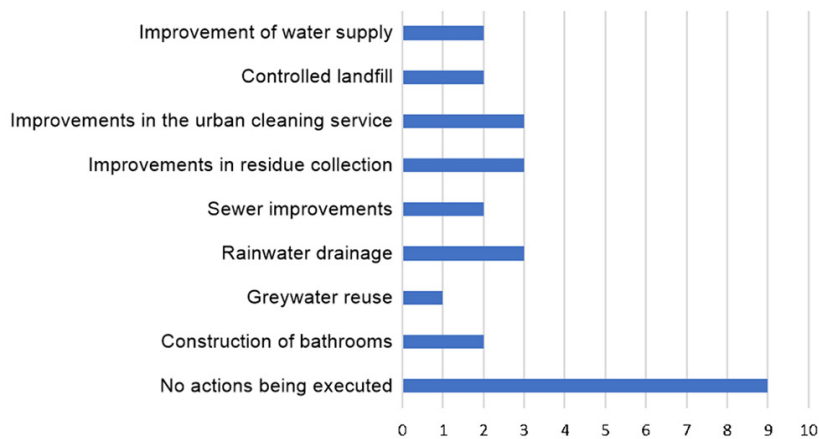


Figure 4. Actions executed by the municipalities after the completion of PMSB (2023)
Source: Own elaboration (2023).

It may be observed that there exists a strong correlation between the provision of basic sanitation services and the overall urban landscape and hygiene. The management of solid waste, drainage systems, sewage treatment, and the reuse of greywater are essential components in preserving the aesthetic appeal of a developed urban area.

In the field of responses reserved for indicating the actions that have already been implemented, three municipalities reported a complete absence of available budgetary resources. This finding reinforces the data presented in Table 1, which identified a shortage of financial resources as being a significant planning challenge. This factor directly contributes to the next discussion topic, explored in the questionnaire, concerning the projection and allocation of resources within municipal budgets for the 2023 fiscal year. It is a fundamental premise that the effective implementation of actions is contingent upon the secure availability of necessary funds.

With a clear objective, the following question was asked: “Were investments in basic sanitation actions within the municipality included or forecasted in the Annual Budget Law (LOA) and/or the Guidelines Law (LDO) for the year 2023?” The results obtained are presented Figure 5.

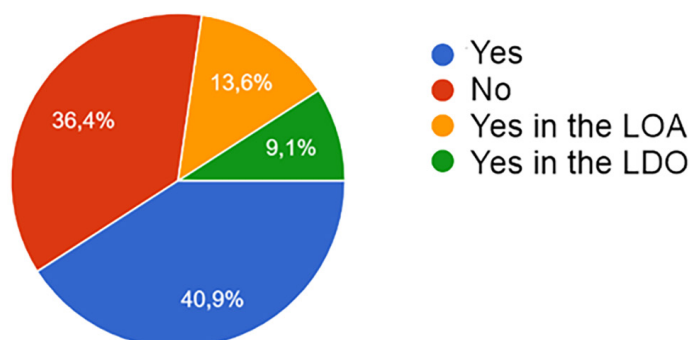


Figure 5. Forecasted resources for actions in basic sanitation in the Annual Budget Law (LOA) and in the Budget Guidelines Law (LDO)

Source: Own elaboration (2023)

It is understood that the planning processes of 36.4% of the municipalities studied have a failure diagnosed as a result of the research.

It is understood that as a result of the research, a failure was diagnosed in the planning processes of 36.4% of the municipalities studied. Sanitation planning is not a separate activity from municipal administration, and the budgetary forecast for actions whose goals and objectives have been established must be ensured in the budgetary instruments of responsibility at this level. While the existence of plans is a crucial, a determining factor even, the expectation of implementing action cannot solely rely on document completion. Other equally critical elements include public participation, democratic engagement, social and environmental considerations, and sufficient budgetary capacity for execution (Moscarelli; Kleiman, 2017).

While not the primary focus of this study, the institutional capacity of municipalities is undeniably linked to this subject. A shortage of technical staff is consistently highlighted as a major hurdle in developing the planning instrument. However, given the role played by UFRN (Rodrigues *et al.*, 2018), FUNASA, and COPIRN in offering courses and partnership programs for developing the document, this obstacle should not be insurmountable.

Add to this the fact that in the study region, through higher education institutions, professionals are trained annually to enter the job market qualified to work in this activity: UFRN offers an undergraduate degree in Geography and a postgraduate degree in Planning and Territorial Dynamics in the Semi-Arid Region, and since 2015, the Universidade Federal Rural do Semi-Árido (Ufersa) has

offered a course in Environmental and Sanitary Engineering. Thus, the regional scenario, in terms of training professionals, is favorable and holds the potential for executing the requirements related to basic sanitation planning, suggesting that the hypothesis of the fragility of municipal managements in the field of study is a strong indicator of the reason for the delay of the PMSB.

Furthermore, one characteristic of planning is the integrated, interdisciplinary, and intersectoral perspective of the intervening factors in the studied centers, ensuring an initial diagnosis of both strengths and weaknesses. This approach guarantees that established goals are grounded in the real possibilities of executing the plans (Couto, 2014).

Thus, having comprehensively understood the factors that are interrelated with the development and implementation of the PMSB in the Upper West Region of Rio Grande do Norte, as well as the primary challenges identified by management teams and the data derived from documentary research and questionnaire administration, Figure 6 was constructed to illustrate the current state of the study, encompassing the development and implementation of the plans within this territory.

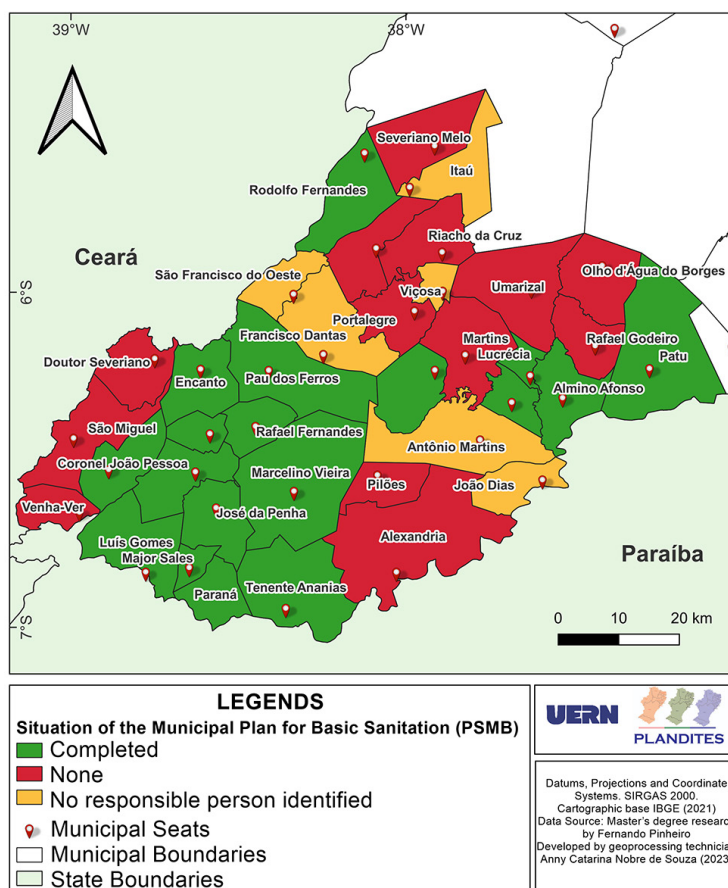


Figure 6. Overview of basic sanitation planning in the Upper West Region of Rio Grande do Norte
Source: Own elaboration (2023).

It was considered that, in the municipalities that did not participate in the research and whose plans were not identified through documentary searches, the plan is therefore, non-existent. Our assumption is grounded in the principle that official documents and management tools are considered to exist only if they have been published through official channels.

Moreover, certain municipalities are unable to even confirm the presence or absence of the PMSB. Despite the documentary search yielding no publications regarding this document, municipalities where a contact person, responsible for discussing sanitation, could not be identified were marked differently, since this information was crucial to the research.

Currently, based on data obtained and compiled for this study, among the 37 municipalities constituting the Upper West Region of the state of Rio Grande do Norte, 18 (48.6%) have actually completed their Basic Municipal Sanitation Plans. It was impossible to find the published plans for 13 municipalities (35.1%), inquiries requiring the completion of plans yielded no response. Moreover, a more critical finding is that 6 municipalities (16.2%) were unable to identify a staff member responsible for PMSB or sanitation within their jurisdiction, which in this study, is considered even more serious than the non-existence of the plan.

Final considerations

Municipal Basic Sanitation Plans (PMSB) are crucial territorial policies that form the backbone of the effective management of sanitation services and the equitable distribution of these resources across the entire nation. The specialized literature underscores the pivotal role played by planning as being a fundamental element in guiding management decisions that align with the real needs of each region and its population, while taking into account both local and regional particularities.

When analyzing the process of developing and implementing PMSB in the Upper West Region of Rio Grande do Norte, we found it to be a challenging endeavor marked by various difficulties. Despite the completion of PMSB in 18 municipalities, our findings indicated that 13 within the analyzed region have not published these documents, and that six municipalities were unable to identify any staff member responsible for sanitation within their administrations. This absence of internal coordination suggests a potential lack of political will, and disjointed or fragile management, and underscores the historically low priority accorded to sanitation planning on the municipal agenda.

It is crucial to emphasize that the effective development and implementation of PMSB yield a multitude of benefits for municipalities. Beyond being a mandatory prerequisite for accessing federal sanitation investments, PMSB furnishes a robust framework for guiding policies and actions that enhance public health, the quality of life, environmental preservation, and sustainable development. Municipalities equipped with well-structured PMSB exhibit a heightened capacity to leverage financial and technical resources, as well as to engage civil society in the decision-making process, culminating in more transparent, participatory, and efficient sanitation service management.

On the other hand, the absence of a PMSB can have significant consequences for municipalities. In addition to the loss of opportunities for accessing resources and federal investments, the lack of a sanitation plan undermines the capacity for strategic planning and efficient service management, heightening the risks of environmental issues, public health crises, and a diminished quality of life for the population.

Therefore, given the fact that the reasons cited as challenges for developing the documents could potentially be addressed through the formation of consortia and the training support of FUNASA and UFRN, the need to include such discussions on the political agenda is urgently reinforced.

Furthermore, for future perspectives of analysis on PMSB, it is crucial to concentrate on the water and sewage service concessionaires operating within the country's federative states. In alignment with the prerogatives outlined in the new basic sanitation legal framework, these entities must assume a shared responsibility and actively participate in the strategic planning essential for achieving universal access to basic sanitation.

In view of these considerations, it becomes imperative that municipalities prioritize the strengthening of their respective planning processes. This should involve ensuring robust public participation, adequate technical and financial resources, and effective multi-level budgetary integration with states, the federal government, and state water and sewage concessionaires, in order to facilitate the successful implementation of basic sanitation. Additionally, the establishment and maintenance of unified, up-to-date information systems, with access to investments conditional upon their use, is essential for optimizing water and sanitation resource management and consequently enhancing the quality of life for local communities.

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