

THE NATIONAL RURAL WATER AND SANITATION PROJECT (1985-1989) IN BRAZIL: LIMITS AND POTENTIALS

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Abstract

In this article, the principles of the National Rural Water and Sanitation Project (PNSR), elaborated during the 1980s, are analyzed, discussing the advances and the limits reached in the development of rural water supply and sanitation in Brazil. The methodology used was an analysis of the content of documents and interviews with key actors. The results have demonstrated that the formulation of the PNSR promoted a new contribution of knowledge to the water and sanitation sector in Brazil, bringing innovations concerning the approach to water and basic sanitation in rural areas, especially relating to its integration with health, the processes of education and social participation, the decentralization of services, the use of appropriate technologies and community involvement in the management of services. Although it did not result in a government program, the legacy left by the PNSR has provided a great contribution in the form of studies, which are still relevant today.

Keywords

Water Supply; Rural Area; Sanitation; Formulation of Public Policies; PNSR.

O PROJETO NACIONAL DE SANEAMENTO RURAL (1985-1989) NO BRASIL: LIMITES E POTENCIALIDADES

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Resumo

Neste artigo são analisados os princípios do Projeto Nacional de Saneamento Rural (PNSR), elaborado na década de 1980, discutindo-se os avanços e limites alcançados no desenvolvimento do saneamento rural no Brasil no período. Empregou-se como metodologia a análise de conteúdo de documentos e de entrevistas com atores-chave. Os resultados demonstram que a formulação do PNSR promoveu um novo aporte de conhecimentos ao setor de saneamento no país, com inovações no que se refere à abordagem sobre saneamento básico em áreas rurais, especialmente em sua integração à saúde, aos processos de educação e participação social, à descentralização dos serviços, ao emprego de tecnologias apropriadas e ao envolvimento comunitário na gestão dos serviços. Embora não tenha sido efetivado como um programa de governo, o PNSR deixou como legado uma vasta contribuição sob a forma de estudos, ainda hoje pertinentes.

Palavras-chave

Abastecimento de Água; Área Rural; Esgotamento Sanitário; Formulação de Políticas Públicas; PNSR.

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Introduction

The provision of water supply and sewage services in rural areas presents different characteristics to those in urban areas. Thus, the process of formulating public policies should be able to envisage different specificities, a challenge on a global scale. The particularities generally related to rural areas, such as a greater population dispersion across the territory or distribution in small agglomerations, the need to adopt unconventional technologies and the difficulties of guaranteeing technical assistance and training to local service providers, make it difficult to formulate and execute public policies aimed at rural demands (MANTILLA, 2011).

In Brazil, from the 1970s onwards, the planning of the water and sanitation sector was strongly influenced by the National Water and Sanitation Plan (PLANASA).² The implementation of this plan contributed to increasing the availability of water supply and, to a lesser extent, sewage, favoring urban areas in regions with a more dynamic economy. In addition to creating a mismatch between the actions aimed at a water supply and sewage system, the primacy of the plan ultimately increased inequalities, since residents of urban peripheries and

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2. This is the Portuguese acronym used in Brazil, and throughout the article all acronyms will be used in this form.

rural areas were passed over in the execution of public policy (BRITTO et al., 2008). In rural areas, government action maintained the same characteristic that shaped sanitation work in the past, as indicated by Melo (1989), with limited actions over a widely dispersed area, in a multiplicity of agencies and ministries that acted within the sector in an uncoordinated manner, with an absence of long-term planning.

The attendance framework for water and sanitation services in Brazil highlights the need for greater action and investments in rural areas. In terms of water supply, only 23% of rural households are connected to the water mains supply with internal plumbing. In relation to the sewage system, 64% of rural households dispose of wastewater in rudimentary septic tanks and 11% directly into the environment, in ditches, rivers, lakes or the sea (IBGE, 2011).

With the decline of PLANASA, in the midst of the economic crisis experienced in Brazil during the 1980s, there was an institutional vacuum in the sector. The National Rural Water and Sanitation Project (PNSR) emerged as an unprecedented initiative, on a national level, for planning the activities of rural water and sanitation, after years of isolated actions. Elaborated from 1985 to 1989, it remained under the supervision of the Planning Secretariat of the Presidency of the Republic (SEPLAN), with executive action by the Institute of Economic and Social Planning (IPEA) and the participation of the Ministries of Health and of Urban and Environmental Development. It received technical support from the Pan American Health Organization (PAHO) and partial financing, through loans, from the International Bank for Reconstruction and Development (BIRD).

The formulation of the PNSR and its insertion into the public agenda occurred during a period of intense transitions in Brazil, after 20 years of military dictatorship (1964-1984). At the core of the redemocratization process, which was being established, was the search for guaranteeing social rights and strengthening the actions of social movements. In its conception, the PNSR addressed a set of innovative principles, which reproduced the new issues that emerged in a context of profound changes on both the political and social levels (ROLAND; HELLER; REZENDE, 2020).

The PNSR was particularly prominent for its broad vision of the territory and its conduct based on a comprehensive scope of actions, unlike previous programs developed by the federal government. However, its implementation was restricted, and was unable to expand across the entire national territory. Some of the principles conceived during the creation of the project became distorted during the execution phase, presenting failings that undermined the sustainability of the water supply and sewage systems that were constructed (ROLAND; HELLER; REZENDE, 2022).

This article seeks to analyze the conception process of the PNSR, emphasizing its principles and guidelines, in the light of the context in which it was developed. The analysis bears elements that make it possible to move forward in understanding the problems faced and the achievements accomplished, contributing to the construction of the current rural water and sanitation policy in Brazil, which has experienced an important moment with the launching of the Rural Brazil Water and Sanitation Program, in December 2019 (BRASIL, 2019a; 2019b).

2. Methodology

This was a qualitative research study for which the data collection was based on consulting official public documents and conducting individual interviews with specialists. The documents encompass the preliminary version of the National Rural Water and Sanitation Program (BRASIL, 1987) and the nine volumes that make up the Rural Water and Sanitation Series (IPEA, 1989a; 1989b; 1989c; 1990a; 1990b; 1990c; 1990d; 1990e; 1990f). These documents express the conception of the PNSR for the development of rural water and sanitation in Brazil, based on studies that included the planning and formulation of public policies on rural water and sanitation for the three levels of government, covering topics such as: management, education, social participation, technologies and human and financial resources. The semi-structured interviews (FLICK, 2011) were conducted with 14 actors: technicians and consultants who were part of the team responsible for elaborating and implementing the PNSR at the IPEA, PAHO, Ministry of Urban Development and Environment, Ministry of Health, the State Government of Minas Gerais and the Minas Gerais Water and Sanitation Company (COPASA) and a community representative from the community served by the project.

The material that was collected and organized was submitted to content analysis (BARDIN, 2011), and five analytical categories were established: vision of sanitation, technology, education and participation, economic-financial aspects and management and provision of services.

3. Results and discussion

The PNSR envisaged the materialization of the water and sanitation policy in rural areas in Brazil from the formulation of three instruments: the Local Rural Water and Sanitation Project (PLSR), the State Rural Water and Sanitation Program (PESR) and the National Program (IPEA, 1989b). The composition of the PLSR, the smallest planning unit proposed by the PNSR, was based on three development axes: technological, social and economic-financial. The technological axis encompassed the implementation of water supply systems, sewage systems

and improved sanitation (home and/or public sanitation modules), as well as their operation and maintenance. Seeking to overcome the purely technical vision of water and sanitation, the project introduced education and social participation as central themes of the social axis, which also addressed the training of human resources, institutional organization and cultural aspects of rural locations. Lastly, the economic-financial factors, such as execution costs and funding sources, completed the basic triad of the PNSR (IPEA, 1989a).

Around 30 years after the PNSR was developed, this triad served as a source of inspiration for the Rural Brazil Water and Sanitation Program (BRASIL, 2019a; 2019b), which is also based on three strategic axes: 1) the management of services; 2) education and social participation; and 3) technology. Both, at different times and each with its own particularities, have sought to go beyond predominantly technocentric approaches. In its conception, the PNSR therefore presented innovations related to the technologies used, aspects of education, social participation and service management.

3.1 Vision of sanitation and institutional structure

The definition of sanitation adopted by the PNSR consisted of a set of measures aimed at preserving and/or modifying the conditions of the environment, with a view to contributing to the prevention of diseases and to the promotion of health, well-being and citizenship. In the vision of the project, for sanitation to be effective, a solution had to be sought that integrated water supply, sewage systems and improved home sanitation (BRASIL, 1989a).

Expanding the coverage of water and sanitation services was one of the intermediate objectives of the PLSR. Its final objective, in addition to implementing physical water and sanitation infrastructure, was to create conditions to satisfy water and sanitation needs and to generate improvements in the quality of life of the rural population (BRASIL, 1989b). The PNSR, as mentioned above, was based on an integrated vision of sanitation, health and education as the core for developing a national policy.

The water and sanitation sector has historical roots intertwined with the origins of public health in Brazil, dating back to the first efforts to combat the spread of disease (HOCHMAN, 2006). However, from the 1960s, there was a gap between the actions of health and water and sanitation, which resulted in disconnected policies. The health sector advanced towards the assistentialist model, with a substantial expansion of social security medical assistance in order to constitute a new standard of health care in the country, until then, largely of a private nature. Water and sanitation, under the aegis of PLANASA, was developed with a focus

on expanding the coverage of services and urban development (MENICUCCI; D'ALBUQUERQUE, 2018).

A diagnosis of the situation of water and sanitation in rural areas of Brazil, conducted within the scope of studies for the development of the PNSR, indicated a mechanistic approach in the implementation of water supply systems, with, to a large extent, a prevalence of the “engineering vision”. The project therefore sought to overcome this vision by promoting an extension of the concept of water and sanitation into the scope of public health. The PNSR also recognized the role of local culture, considering its influence on health habits and its direct relationship with the concept of water and sanitation, which conferred unique characteristics onto each location (IPEA, 1989b).

It is important to mention that, in addition to water supply and sanitation, the PNSR addressed other aspects of water and sanitation, such as solid waste management, vector control and rainwater drainage. However, given the lack of financial resources to make investments in services and infrastructure, it proposed approaching these components through educational processes and raising the awareness of the population (IPEA, 1990a).

According to the vision presented by the PNSR, it was the duty of the State to promote adequate measures, both to implement water and sanitation in rural locations and to guarantee the sustainability of services. However, from the diagnosis carried out, it was found that the institutional structure of government, aimed at implementing rural water and sanitation actions, consisted of a “patchwork quilt”. Financial resources for investments were generally made possible by special programs, which, when extinguished, brought about a discontinuity of government action (IPEA, 1989b).

In Brazil, political-administrative discontinuity is commonly identified as an obstacle regarding the development of public policies (MACHADO; COTTA; SOARES, 2015; NOGUEIRA, 2006). In order to overcome this problem and achieve greater effectiveness in water and sanitation actions, in its formulation, the PNSR indicated the need to consider a set of measures aimed at harmonizing institutional, funding, participation and education issues, along with human resource development and appropriate technologies, with an integrated action of the various levels of government and organized communities (IPEA, 1989b). In short, the project presented a vision of water and sanitation that went beyond the mere construction of infrastructure, and considered intersectorality, planning in different spheres of government, community involvement and local specificities: “what is rejected is the possibility of a single model for the implementation of rural water and sanitation projects in a country as vast and complex as Brazil” (IPEA, 1989b, p. 78).

3.2 Technology

The technological aspect represents one of the three main axes for the planning of rural water and sanitation in the local spheres. The technologies employed by the PNSR were characterized by dynamism, whereby the adoption of conventional models was rejected. According to the diagnosis undertaken by the project, the systems that had been developed until then for small communities generally presented the same criteria and standards as conventional technologies, with only a reduction in scale, without taking into account the local environmental and cultural conditions (IPEA, 1989b).

The PNSR stipulated that the technical solutions should be simple and at a low cost, and should present viable operating conditions, in order to allow their management by the community itself. The joint water-sewage-improvement solution should be considered as an indivisible system, constituting a single water and sanitation infrastructure. It also proposed adopting appropriate technical solutions for the different regions of the country. In addition, the operation and maintenance of the systems deserved particular attention, since the procedures should be capable of being incorporated by the local culture. Knowledge, practices and local experiences should be valorized, ensuring the use of labor and materials from the region (IPEA, 1989a).

At the time, adopting appropriate technologies for rural water and sanitation was not new. During the 1970s and 1980s, there was a great proliferation of research groups supporting the idea (DAGNINO; BRANDÃO; NOVAES, 2004). The World Bank published a series of documents on international experiences in the area of water and sanitation that indicated, among other things, the fact that the imposition of projects based on more modern technologies in rural areas often resulted in inappropriate solutions and their consequent failure (KALBERMATTEN; JULIUS; GUNNERSON, 1980). Within this context, Pasha and McGarry (1989) and Karp and Cox (1982) presented case studies of successful water and sanitation projects in rural areas of Pakistan and Guatemala, respectively, that made use of appropriate technologies and encouraged community participation, prioritizing the use of local labor and materials. In these studies, the use of the term appropriate technologies was mainly related to reducing implantation costs and the possibility of constructing and operating the systems by the users. The PNSR proposal, however, was a little more comprehensive. Its publications also emphasized the sociocultural aspects and the regional particularities of the communities. One significant point presented with the concept of appropriate technology by the PNSR concerns its acceptance by the population. Cases of abandoned water and sanitation systems in rural areas are recurrent, and the sustainability of the systems is one of the great challenges

faced once they have been constructed (KAMINSKY; JAVERNICK-WILL, 2014). One of the essential factors for overcoming this challenge is the involvement of the community in the planning, execution and management of health solutions (SARA; KATZ, 2005; NARAYAN, 1995).

Appropriate technology proposals began to lose their momentum during the mid-1980s, given their association with an image of backwardness (RODRIGUES; BARBIERI, 2008). Over the last decade, the term social technology has gained prominence in the discussion of solutions capable of overcoming the water and sanitation deficit in rural areas, and was adopted by the current Rural Brazil Water and Sanitation Program (BRASIL, 2019a; 2019b). Social technology implies constructing solutions collectively by its beneficiaries, so that they act autonomously (ITS, 2004). Thus, they are not just users of solutions produced by specialists, as is the case with many proposals from different streams of appropriate technology.

Another point mentioned by the PNSR refers to the quality of the services provided. In the case of water supply, the mere presence of physical infrastructure does not guarantee the provision of services with quality and in sufficient quantity (ALEIXO et al., 2019). Studies have demonstrated that in cases where there are long periods of intermittent distribution or water incompliant with potable water standards, distribution systems may continue to expose the population to situations of vulnerability (MAJURU; JAGALS; HUNTER, 2012; GUARDIOLA; GONZÁLEZ-GÓMEZ; GRAJALES, 2010).

In addition to adopting appropriate technologies, in the strategy for attending rural communities proposed by the PNSR, the possibility also existed of considering the progressive implementation of solutions, according to the expansion of communities. Thus, the starting point was represented by solutions with fountains and empty septic tanks until the demand for domestic water connections and sewage networks was reached (IPEA, 1989c). This progressive advance does not denote a negative aspect. One of the general principles established by the United Nations (UN) for human rights is the progressive realization and not setback (ALBUQUERQUE, 2014). Fulfilling the human right to water and sanitation depends on the availability of resources, which is usually not achieved in a short period of time. Therefore, States are obliged to take measures aimed at the progressive realization of these rights, and situations that lead to a reduction in the enjoyment of human rights are not allowed.

The technological propositions proposed by the PNSR, therefore, complied with the standards in force at the time of its elaboration. The vision of adequate access to water and sanitation services evolved into the human rights approach to water and sanitation (ONU, 2010), which represents a paradigm shift in the

sector by incorporating several aspects that must be considered to guarantee these rights. For example, these would include issues related to gender, minority and vulnerable groups, the cultural aspects of the population and its potential for social participation, the quality of the service provided and the acceptability by users and affordability.

3.3 Education and participation

In the 1980s, actions aimed at supplying potable water and the disposal of waste in rural locations in developing countries, financed by the World Bank, covered the community level, in which users would be responsible for the choices and maintenance of systems based on adopting appropriate technologies, of low cost and easy maintenance (KLEEMEIER, 2000). This philosophy was incorporated during the conception of the PNSR.

The PNSR argued that the process of education and social participation would develop from the critical awareness of citizens regarding water and sanitation practices. The population should feel the “owner of the project”, and be involved right from its formulation, learning about the installation and the operation of the systems, through to the supply of labor and materials. The management of services, in turn, needed to be perennial. The community association was expected to be responsible for selecting local operators who would be responsible for the proper functioning of the systems. Workers would receive technical training for undertaking tasks involved in operating and maintaining the system, as well as for financial management. The population would participate in the educational process, in which content related to the use and care of the systems and the preservation of environmental health would be developed (IPEA, 1990a; 1990b).

Thus, a methodology based on education and social participation was established by the PNSR, based on the ideals of Paulo Freire,³ which highlighted the relationships of learning and dialogic communication between educator/student in the process of knowledge production. The project stressed the need for such a procedure to take permanent root. However, the proposition of popular involvement ended in the local sphere, where the PLSR was to be elaborated and the systems implemented, thereby not reaching the formulation of a national policy.

Although community participation is currently recognized as a key factor for the success and sustainability of water and sanitation systems in rural areas

3. Paulo Freire (1921-1997) was a Brazilian educator and philosopher who influenced the movement of critical pedagogy, through the vision that education is a political act. See FREIRE, P. *Pedagogia do oprimido*. São Paulo: Paz e Terra, 1974. 253 p.

(MARKS; KOMIVES; DAVIS, 2014; RÍOS-CARMENADO; GUILLÉN-TORRES; HERRERA-REYES, 2013; MARKS; DAVIS, 2013; 2012), in the 1980s, the diagnosis undertaken by the PNSR team indicated the challenges of establishing this practice in Brazil, since the public bodies responsible for the actions of rural water and sanitation did not generally adopt a work methodology that favored the participation of the population (IPEA, 1989b).

The lack of organization on the part of society was also mentioned by the PNSR as a characteristic that needed to be overcome. A diagnosis of the rural water and sanitation situation in Brazil demonstrated that community organizations were often constituted merely to fulfill formal requirements in order to receive benefits (IPEA, 1989b). Therefore, they were not characterized as organic popular movements in search of rights. It should be noted that the characteristics of community associations exert a direct influence on the success of the enterprise. Factors such as collective mobilization, strong leadership and institutional transparency positively affect different stages of the water and sanitation service delivery. In cases where associativism occurs *pro forma*, it is difficult to reach and maintain these factors (HUTCHINGS et al., 2015).

One fundamental aspect that integrated the education and participation strategy proposed by the PNSR refers to the effective participation of women, especially in organizational structures and decision-making. In the viewpoint of the project, women would be the main direct beneficiaries of water and sanitation services, since it is they who are usually responsible for water supply, hygiene and domestic cleaning (IPEA, 1990b). When water and sanitation facilities are inadequate, women suffer a disproportionate impact on their health and quality of life. Once empowered, they become capable of triggering actions in the household sphere that generate impacts on the health and well-being of all residents. While in the community sphere, its strong performance may contribute to the development of more equitable public policies (SILVA et al., 2020). Although already relevant in the 1980s, gender issues and their relationship with water and sanitation were covered in a very incipient manner in public policies; currently they have gained greater visibility and are emphasized in the Human Right to Water and Sanitation (ONU, 2016).

Although the experiences of community participation were encouraged by the World Bank in the 1980s, its concept was limited in the face of the neoliberal vision of reducing the State actions that it presented. Community participation, from the World Bank's perspective, was based on achieving four objectives: sharing power, developing the capacity of beneficiaries, helping to increase project effectiveness, and sharing costs (IPEA, 1990b). A lack of educational and gender

aspects may therefore be observed, as well as permanent monitoring and an exchange of knowledge, all of which were addressed by the PNSR-89 with a broader view than that of the World Bank. The perspective propagated by the PNSR was that participatory processes should not occur as an institutional concession; on the contrary, they should be understood as a right and a real capacity of the population to claim and defend their viewpoints on issues that concern them, such as health, water and sanitation and education. Thus, the project assumed participation as an exercise of citizenship (IPEA, 1990b).

The proposal for education and social participation presented by the current Rural Brazil Water and Sanitation Program (BRASIL, 2019a; 2019b) is close to that defended by the PNSR. The current program provides for the articulation of different modalities of education as a means of consolidating shared responsibilities. However, its proposal for social participation is more emphatic, and is not integrated into the educational process, although there is a strong intersection between them. The exercise of participation and social control is proposed through the institution of state forums (BRASIL, 2019a).

3.4 Economic-financial aspects

In the 1980s, following the declaration of a commitment by the international community to the International Decade for Drinking Water and Sanitation (ONU, 1977), several initiatives were developed for the supply of drinking water in rural areas, based on the premise that these services should be subsidized by governments, since most families living in rural communities did not have the financial means to pay for the systems. However, the international community was not unanimous in adopting this conception. Some financial organizations, such as the World Bank, advocated an alternative approach, which advocated that people should pay for improved water services, and would be able to spend at least 3-5% of their income (WORLD BANK, 1993).

The studies developed within the scope of the PNSR followed the line adopted by the World Bank. In the project's view, the practice of sustaining water and sanitation services exclusively with public resources showed limited results, since the operation and maintenance costs were continuous over time, requiring contributions of funds that were not always available in the public coffers (IPEA, 1989a). Therefore, the financial burden needed to be a shared responsibility between the government and the community (IPEA, 1989b).

The funding of investments necessary for the development of the PLSR would come from the Union, the states and municipalities, and would also rely on the financial participation of the communities. On the other hand, the operating

costs of the services would be covered by the users, whenever possible, in the form of fees or tariffs. When users could not afford the total amount of operating costs, the PNSR calculated that alternatives should be studied, which would enable a balance to be achieved between costs and revenue. For example, subsidies from the municipality and/or the state, in the form of financial resources or payments for electricity costs, operating personnel, chemical products, etc. (IPEA, 1989a).

However, as the literature demonstrates, the financial criterion of cost recovery should not be the only guideline for the provision of water and sanitation services by the public authorities, which must progressively guarantee universal access to the population, in an equitable manner and without discrimination (HALL; LOBINA, 2013). The inability to pay by the most vulnerable groups should not signify, therefore, no provision of service. Economic accessibility constitutes one of the criteria of the Human Rights to Water and Sanitation. In the vision propagated by the UN, people should have the means to pay for these services. Nevertheless, the cost of meeting these needs must not limit the users' ability to purchase different basic goods and services associated with other human rights. Thus, the human rights framework does not require services to be provided free of charge, but States have an obligation to provide free services or to implement adequate subsidy mechanisms to guarantee access to the poorest (HELLER, 2015; ALBUQUERQUE, 2014).

From the analysis presented, it has been possible to perceive that, although the PNSR was based on the payment of fees by the user as a means of guaranteeing the maintenance and operation of the systems, there was a concern that the type of technology adopted and the amount charged corresponded to the payment power of communities. Furthermore, the PNSR did not totally exclude the responsibility of the public authorities, providing for the application of government subsidies, whenever necessary. However, it presented the fragility of not verifying whether the amounts spent for access to water were or not compromising access to other fundamental rights. Thus, the current perspective of the Human Rights to Water and Sewage (ONU, 2010) is more legitimate in the face of the challenge of tariff adequacy in the provision of water and sanitation services in rural areas, since there may be segments of the population for which any payment method is inaccessible.

3.5 Management and provision of services

The PNSR proposal for the provision and management of water and sanitation services in rural areas was based on administrative decentralization. The project established government obligations in the three spheres of government – federal, state and municipal –, emphasizing the importance of action at the municipal level together with the community (IPEA, 1989b).

The extensive Brazilian territory and the operational characteristics of public water and sanitation services in rural areas conditioned the preliminary version of the PNSR to consider the establishment of rural water and sanitation actions throughout the country as being extremely costly, in economic terms, for a federal agency articulated directly at the local (municipal or community) level. This was why it became relevant for the involvement of the state public authorities in equating the policy (IPEA, 1987). The formation of teams integrated at the state level was therefore encouraged, coming from different secretariats and state entities, in order to format institutional arrangements better suited to the peculiarities of each state. Due to regional diversities, the program advised against adopting a single institutional model. The institutional organization that would come into force in each state would be established by the State Rural Water and Sanitation Programs (IPEA, 1987).

The participation of municipalities was particularly important for the PNSR, since it involved the level of public authorities closest to the local problems and demands, thereby constituting its operational basis for executing the projects (BRASIL, 1987). The division of responsibilities between the different levels of power and the organized community was considered essential for the continuity of services throughout the years. Community associations were expected to have technical and financial support available whenever they needed (IPEA, 1989b).

The arrangement proposed by the PNSR for the management and provision of water and sanitation services in rural areas has similarities with models traditionally adopted in different rural locations throughout the world, all based on community management (CALZADA; IRANZO; SANZ, 2017; OECD, 2012; WHITTINGTON et al., 2009). In Brazil, recent studies have signaled shared management between the community and the government as a viable model for actions involved in organizing water supply and sanitation in rural areas (RAID, 2017; SILVA, 2017).

It is important to highlight some of the challenges that were faced by the PNSR at the end of the 1980s and that made it difficult to achieve effectiveness in the management of water and sanitation services in rural areas. Although the principle of administrative decentralization argued by the project proved to be in line with the new 1988 Federal Constitution, the implementation of a water and sanitation policy following this model required support from local authorities, which often lacked human, technical, administrative and financial resources. Arretche (1999) contested decentralization models in which responsibilities are transferred to municipalities without providing them with the conditions to fulfill their functions. The institution of planning at the municipal level also presents a number of other

difficulties, especially in small towns. The unavailability of financial resources and limitations regarding professional qualification and municipal technical capacity are the main challenges identified by Lisboa, Heller and Silveira (2013) for the elaboration of municipal water and sanitation planning.

If at the municipal level it was necessary to establish support and technical training, at the state level, state water and sanitation companies predominated, with their market vision. With the financial self-sustainability policy imposed on the companies, their viability depended on the scale of the undertakings. Rural areas were not, therefore, attractive. Thus, the PNSR's proposal to share responsibilities between the three spheres of government, with emphasis on the performance of state water and sanitation companies, stood out as a novelty during this period, something that, in the present day, is still incipient.

A recent model for managing water and sanitation services in rural areas in Brazil, with the involvement of state water and sanitation companies, is the Integrated Rural Sanitation System (SISAR) . The support provided by the Water and Sewage Company of the State of Ceará (CAGECE) is demonstrated as one of the points that contribute to the success of the model, promoting its sustainability (ROCHA, 2013).

In addition to carrying out water and sanitation actions in rural areas, through its companies, in the PNSR, the state public authorities were also responsible for formulating the State Rural Water and Sanitation Programs. The proposal of elaborating state programs of rural water and sanitation was taken up in the current Rural Brazil Water and Sanitation Program. The Program establishes the adoption of planning instruments both at the municipal and state levels: as one of the competences of state governments, it defines the institution of Rural Water and Sanitation Programs; as competences of municipal governments, it delimits the elaboration and execution of Municipal Plans and Local Water and Sanitation Projects, covering rural areas (BRASIL, 2019a; 2019b).

The current Rural Brazil Water and Sanitation Program also promotes the decentralization of public policies on rural water and sanitation, such as the PNSR. But, for this, it advocates the creation of new instances of coordination and management, through the institution of forums at the three federated levels, thus seeking the involvement of a wide range of actors from across the country related to water and sanitation (BRASIL, 2019a; 2019b). This arrangement conforms to an innovative management practice, in order to transcend the governmental sphere from the institution of forums, through which it is intended to avoid any interruption in executing policies with each change of government.

The analysis herein presented demonstrates that the management of water and sanitation services in rural areas does not present one single model of success and may be structured with different arrangements. One important aspect of the management of the PNSR has been that the public water and sanitation policy aimed at rural areas should be planned, executed and evaluated according to each reality.

4. Conclusions

From the analyzes conducted, there is evidence that the PNSR has presented innovative propositions when compared to PLANASA, a national coverage plan, and to the international recommendations of the World Bank regarding water and sanitation in rural areas. The PNSR was ahead of its time: it signaled a break with established technocratic standards and was in tune with the trends that were beginning to take shape on the international scene, as well as with the country's redemocratization environment, after the overthrow of the military regime.

The integrated vision of water and sanitation – based on joint actions of water supply, sewage and sanitation improvements – and its direct relationship with public health, the quality of life and the well-being of the population demonstrate the search for overcoming the purely technical vision of water and sanitation, focused on infrastructure. The proposals for education and social participation sought to promote the exchange of knowledge and the conscious assimilation of information. With regard to the provision of water and sanitation services, the importance of public authorities has been emphasized, and is recommended in order to provide support to community associations for operating and maintaining the systems. The PNSR has demonstrated concern in approaching and adapting to the local reality, providing for the adoption of planning instruments at both the municipal and state levels. Furthermore, it has also encouraged the adoption of technologies appropriate to cultural, regional and demographic peculiarities. In a country as extensive and rich in diversity as Brazil, the PNSR has rejected rigidity and encouraged plurality – in the design of solutions, in the composition of technical teams, in the implementation of systems and in the management of services.

The significant legacy left by the PNSR has been its contribution of knowledge, through studies based on the Brazilian institutional structure and federative organization, which, even today, remain current on several points. The seeds left by the PNSR in its principles and guidelines have borne fruit, as may be observed in the current proposals contemplated by the Rural Brazil Water and Sanitation Program. Although the final objective of the project has not been achieved, since the country did not promote the formulation of a public water and sanitation policy

in the 1980s that contemplated the rural, its concepts and proposals were marked in the historical trajectory of water and sanitation in Brazil, drawing attention to the innovative recommendations for the period.

References

- ALBUQUERQUE, C. *Realising the human rights to water and sanitation: a handbook by the UN special rapporteur*. Booklet 1: Introduction. Portugal: Human Rights to Water & Sanitation, 2014. Disponível em: <https://www.ohchr.org/EN/Issues/WaterAndSanitation/SRWater/Pages/Handbook.aspx>. Acesso em: ago. 2018.
- ALEIXO, B. et al. Infrastructure is a necessary but insufficient condition to eliminate inequalities in access to water: research of a rural community intervention in Northeast Brazil. *Science of the Total Environment*, v. 652, s.n., p. 1445-1455, 2019.
- ARRETCHE, M. T. S. Políticas sociais no Brasil: descentralização em um Estado federativo. *Revista Brasileira de Ciências Sociais*, v. 14, n. 40, p. 111-141, 1999.
- BARDIN, L. *Análise de conteúdo*. 5. ed. Lisboa: Edições 70, 2011.
- BRASIL. *Programa Nacional de Saneamento Rural. Versão preliminar elaborada em dezembro de 1987*. Brasília, DF: Instituto de Planejamento Econômico e Social, 1987.
- _____. Fundação Nacional de Saúde. *Programa Nacional de Saneamento Rural*. Brasília, DF: Ministério da Saúde, Fundação Nacional de Saúde, 2019a. Disponível em: http://www.funasa.gov.br/documents/20182/38564/MNL_PNSR_2019.pdf/08d94216-fb09-468e-ac98-afb4edo483eb. Acesso em: dez. 2019.
- _____. Ministério da Saúde. *Portaria nº. 3.174, de 02 de dezembro de 2019. Dispõe sobre o Programa Nacional de Saneamento Rural e dá outras providências*. Brasília, DF: Ministério da Saúde, 2019b.
- BRITTO, A. L. N. P. et al. Da fragmentação à articulação: a política nacional de saneamento e seu legado histórico. *Revista Brasileira de Estudos Urbanos e Regionais*, v. 14, n. 1, p. 65-83, 2012.
- CALZADA, J.; IRANZO, S.; SANZ, A. Community-managed water services: The case of Peru. *Journal of Environment and Development*, v. 26, n. 4, p. 400-428, 2017.
- DAGNINO, R.; BRANDÃO, F. C.; NOVAES, H. T. Sobre o marco analítico-conceitual da tecnologia social. In: LASSANCE Jr., A. E. et al. (Org.). *Tecnologia social: uma estratégia para o desenvolvimento*. Rio de Janeiro: Fundação Banco do Brasil, 2004.
- FLICK, U. *Introdução à pesquisa qualitativa*. Porto Alegre: Artmed, 2011.
- GUARDIOLA, J.; GONZÁLEZ-GÓMEZ, F.; GRAJALES, Á. L. Is access to water as good as the data claim? Case study of Yucatan. *International Journal of Water Resources Development*, v. 26, n. 2, p. 219-233, 2010.
- HALL, D.; LOBINA, E. Políticas públicas e financiamento de sistemas de esgotos. In: HELLER, L.; CASTRO, J. E. (Org.). *Política pública e gestão de serviços de saneamento*. Ed. Ampliada. Belo Horizonte: UFMG, Rio de Janeiro: FIOCRUZ, 2013. p. 156-178.

- HELLER, L. *Affordability of water and sanitation services. Report of the Special Rapporteur on the human rights to safe drinking water and sanitation*. United Nations, General Assembly, A/HRC/30/39, 2015. Disponível em: <https://digitallibrary.un.org/record/847922>. Acesso em: maio 2021.
- HOCHMAN, G. *A era do saneamento: as bases da política de saúde pública no Brasil*. 2. ed. São Paulo: Hucitec, 2006.
- HUTCHINGS, P. et al. A systematic review of success factors in the community management of rural water supplies over the past 30 years. *Water Policy*, v. 17, n. 5, p. 963-983, 2015.
- IBGE. Instituto Brasileiro de Geografia e Estatística. *Censo Demográfico de 2010*. Rio de Janeiro: IBGE, 2011.
- IPEA. Instituto de Planejamento Econômico e Social. *Projeto Local de Saneamento Rural*. Série saneamento rural 1. Brasília, DF: IPEA, 1989a.
- _____. *Bases para formulação de políticas e programas em saneamento rural*. Série saneamento rural 2. Brasília, DF: IPEA, 1989b.
- _____. *Subsídios para elaboração de programas estaduais de saneamento rural*. Série saneamento rural 3. Brasília, DF: IPEA, 1989c.
- _____. *Fundamentos conceituais e metodológicos da educação e participação em saneamento rural*. Série saneamento rural 4. 2. ed. Brasília, DF: IPEA, 1990a.
- _____. *Subsídios metodológicos para a prática de educação e participação em saneamento rural*. Série saneamento rural 5. 2. ed. Brasília, DF: IPEA, 1990b.
- _____. *Subsídios para a discussão da questão tarifária em saneamento rural*. Série saneamento rural 6. 2. ed. Brasília, DF: IPEA, 1990c.
- _____. *Modelo computacional para programação financeira em saneamento rural*. Série saneamento rural 7. 2. ed. Brasília, DF: IPEA, 1990d.
- _____. *Estudos de caso para uma alternativa metodológica de elaboração de material educativo em saneamento rural (ações experimentais do PNSR)*. Série saneamento rural 8. 2. ed. Brasília, DF: IPEA, 1990e.
- _____. *Subsídios para o estabelecimento de um programa de desenvolvimento de recursos humanos para o saneamento rural*. Série saneamento rural 9. 2. ed. Brasília, DF: IPEA, 1990f.
- ITS. Instituto de Tecnologia Social. Reflexões sobre a construção do conceito de tecnologia social. In: LASSANCE Jr., A. E. et al. (Org.). *Tecnologia social: uma estratégia para o desenvolvimento*. Rio de Janeiro: Fundação Banco do Brasil, 2004. p. 117-134.
- KALBERMATTEN, J. M.; JULIUS A. S.; GUNNERSON, C. G. *Appropriate technology for water supply and sanitation: a summary of technical and economic options*. World Bank research project (RPO 671-46). Washington, DC: World Bank, 1980. Disponível em: <http://documents.worldbank.org/curated/pt/426461468765916413/Appropriate-technology-for-water-supply-and-sanitation-a-summary-of-technical-and-economic-options>. Acesso em: jun. 2020.

- KAMINSKY, J. A.; JAVERNICK-WILL, A. N. The internal social sustainability of sanitation infrastructure. *Environmental Science & Technology (Eletronic)*, v. 48, n. 17, p. 10028-10035, 2014.
- KARP, A. W.; COX, S. B. Building water and sanitation projects in rural Guatemala. *Journal American Water Works Association*, v. 74, n. 4, p. 163-169, 1982.
- KLEEMEIER, E. The impact of participation on sustainability: an analysis of the Malawi rural piped scheme program. *World Development*, v. 28, n. 5, p. 929-944, 2000.
- LISBOA, S. S.; HELLER, L.; SILVEIRA, R. B. Desafios do planejamento municipal de saneamento básico em municípios de pequeno porte: a percepção dos gestores. *Engenharia Sanitária e Ambiental*, v. 18, n. 4, p. 341-348, 2013. doi 10.1590/S1413-41522013000400006.
- MACHADO, J. C.; COTTA, R. M. M.; SOARES, J. B. Reflexões sobre o processo de municipalização das políticas de saúde: a questão da descontinuidade político-administrativa. *Interface – Comunicação, Saúde, Educação*, v. 19, n. 52, p. 159-70, 2015.
- MAJURU, B.; JAGALS, P.; HUNTER, P. R. Assessing rural small community water supply in Limpopo, South Africa: Water service benchmarks and reliability. *Science of the Total Environment*, v. 435-436, n. 2012, p. 479-486, 2012.
- MANTILLA, W. C. *Políticas públicas para la prestación de los servicios de agua potable y saneamiento en las áreas rurales*. Documento de proyecto n. 388. Santiago del Chile: CEPAL, 2011. Disponível em: <https://repositorio.cepal.org/bitstream/handle/11362/3842/1/S2011912.pdf>. Acesso em: mar. 2020.
- MARKS, S. J.; DAVIS, J. Does user participation lead to sense of ownership for rural water systems? Evidence from Kenya. *World Development*, v. 40, n. 8, p. 1569-1576, 2012.
- MARKS, S. J.; KOMIVES, K.; DAVIS, J. Community participation and water supply sustainability: evidence from handpump projects in rural Ghana. *Journal of Planning Education and Research*, v. 34, n. 3, p. 276-286, 2014.
- MELO, M. A. B. C. O padrão brasileiro de intervenção pública no saneamento básico. *Revista de Administração Pública*, v. 23, n. 1, p. 84-102, 1989.
- MENICUCCI, T.; D'ALBUQUERQUE, R. Política de saneamento vis-à-vis à política de saúde: encontros, desencontros e seus efeitos. In: HELLER, L. (Org.). *Saneamento como política pública: um olhar a partir dos desafios do SUS*. Rio de Janeiro: Centro de Estudos Estratégicos da Fiocruz, 2018. p. 9-52.
- NARAYAN, D. *The contribution of people's participation: evidence from 121 rural water supply projects*. Environmentally Sustainable Development Occasional Paper Series No. 1. Washington DC: The World Bank, 1995. Disponível em: <http://documents.worldbank.org/curated/pt/750421468762366856/The-contribution-of-peoples-participation-evidence-from-121-rural-water-supply-projects>. Acesso em: dez. 2019.
- NOGUEIRA, F. A. *Continuidade e descontinuidade administrativa em governos locais: fatores que sustentam a ação pública ao longo dos anos*. 2006. Dissertação (Mestrado em Administração Pública e Governo) – Escola de Administração de Empresas de São Paulo, Fundação Getúlio Vargas, São Paulo.

- OECD. Organization for Economic Cooperation and Development. Rural water and sanitation: assessing impacts. *Evaluation insights*, s. v., n. 6, p. 1-12, 2012. Disponível em: <https://www.oecd.org/dac/evaluation/Evaluation%20insights%20WASH%20final%20draft.pdf>. Acesso em: mai. 2018.
- ONU. Organização das Nações Unidas. *Report of the United Nations Water Conference*. Mar del Plata, 14-25 March, 1977. E/CONF. 70/29. Organização das Nações Unidas, 1977. Disponível em: <https://www.ircwash.org/sites/default/files/71UN77-161.6.pdf>. Acesso em: mar. 2020.
- _____. *The human right to safe drink water and sanitation*. General Assembly Resolution A/RES/64/292. Organização das Nações Unidas, 2010. Disponível em: http://www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/64/292. Acesso em: mar. 2021.
- _____. *Report of the Special Rapporteur on the human right to safe drinking water and sanitation*. Human Rights Council, A/HRC/33/49. Organização das Nações Unidas, 2016. Disponível em: <https://documents-dds-ny.un.org/doc/UNDOC/GEN/G16/167/00/pdf/G1616700.pdf?OpenElement>. Acesso em: mar. 2020.
- PASHA, H. A.; MCGARRY, M. G. *Rural water supply and sanitation in Pakistan: lessons from experience*. World Bank technical paper number 105. Washington, DC, 1989. Disponível em: <http://documents.worldbank.org/curated/en/339521468775504591/pdf/multi-page.pdf>. Acesso em: mar. 2020.
- RAID, M. A. M. *Soluções técnicas de abastecimento de água e modelos de gestão: um estudo em quinze localidades rurais brasileiras*. 2017. Dissertação (Mestrado em Saneamento, Meio Ambiente e Recursos Hídricos) – Escola de Engenharia, Universidade Federal de Minas Gerais, Belo Horizonte.
- RÍOS-CARMENADO, I.; GUILLÉN-TORRES, J.; HERRERA-REYES, A. T. Complexity in the management of rural development projects: case of Lasesa (Spain). *Cuadernos de Desarrollo Rural*, v. 10, n. 71, p. 167-186, 2013.
- ROCHA, W. S. *Estudo de caso do Sistema Integrado de Saneamento Rural (SISAR) no Brasil*. Nota Técnica IBDTN-589. Banco Interamericano de Desenvolvimento, 2013. Disponível em: [https://publications.iadb.org/publications/portuguese/document/Estudo-de-caso-do-sistema-integrado-de-saneamento-rural-\(SISAR\)-no-Brasil.pdf](https://publications.iadb.org/publications/portuguese/document/Estudo-de-caso-do-sistema-integrado-de-saneamento-rural-(SISAR)-no-Brasil.pdf). Acesso em: abril 2020.
- RODRIGUES, I.; BARBIERI, J. C. A emergência da tecnologia social: revisitando o movimento da tecnologia apropriada como estratégia de desenvolvimento sustentável. *Revista de Administração Pública*, v. 42, n. 6, p. 1069-1094, 2008.
- ROLAND, N.; HELLER, L.; REZENDE, S. Access to the Brazilian agenda of The National Rural Water Supply and Sanitation Project (1985). *Revista de Administração Pública*, v. 54, n.6, p. 1654-1671, 2020. <http://dx.doi.org/10.1590/0034-7612201900392x>
- _____. Assessment of the failure to implement a much-needed rural water and sanitation project in Brazil. *Water International* [online], 2022. doi 10.1080/02508060.2022.2040147.
- SARA, J.; KATZ, T. *Making rural water supply sustainable: report on the impact of project rules*. Water and Sanitation Program. World Bank, 2005. Disponível em: <http://documents.worldbank.org/curated/en/495261468135922056/Making-rural-water-supply-sustainable-report-on-the-impact-of-project-rules>. Acesso em: dez. 2019.

- SILVA, A. G. *Proposição de técnicas e modelos de gestão para o esgotamento sanitário em áreas rurais brasileiras*. 2017. Dissertação (Mestrado em Saneamento, Meio Ambiente e Recursos Hídricos) – Escola de Engenharia, Universidade Federal de Minas Gerais, Belo Horizonte.
- SILVA, B. B. et al. Water and sanitation are not gender-neutral: human rights in rural Brazilian communities. *Water Policy*, v. 22, n. 1, p. 102-120, 2020.
- WHITTINGTON, D. et al. How well is the demand-driven, community management model for rural water supply systems doing? Evidence from Bolivia, Peru and Ghana. *Water Policy*, v. 11, n. 6, p. 696-718, 2009.
- WORLD BANK. The demand for water in rural areas: determinants and policy implications. The World Bank Water Research Team. *The World Bank Research Observer*, v. 8, n. 1, p. 47-70, 1993.

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