

Scientific
Journal of
**Applied
Social and
Clinical
Science**

**BASIC SANITATION IN
BRAZIL - 1995 to 2020:
SECTOR DYNAMICS
AND GOVERNANCE**

Tagore Villarim de Siqueira

Master in Economics from the institution:

Universidade Federal de Pernambuco

and economist of BNDES

<http://lattes.cnpq.br/0578604562174801>

All content in this magazine is licensed under a Creative Commons Attribution License. Attribution-Non-Commercial-Non-Derivatives 4.0 International (CC BY-NC-ND 4.0).



Abstract: The approval of Law 14,026, in July 2020, established the legal basis for the beginning of a new era in the basic sanitation sector in the country, with emphasis on the establishment of competition for contracts with municipalities through bidding, the definition of the concession by regional blocks of municipalities and the definition of goals to universalize the attendance of the demand until 2033. The movement of the municipalities for greater autonomy in the process of modernization of the sector began in the 1990s, with the emergence of municipal participation characterized by the objective of universal service to the population more efficiently and effectively. In this sense, this article reflects on this period of changes in the country's sanitation sector, highlighting the importance of the municipal contribution and the benefits provided, such as the mitigation of problems in the areas of public and environmental health, as well as the strengthening of the principles of sustainable development in the country. Such initiatives contributed to a better adaptation of the country to the UN's 2030 Sustainable Development Goals (SDGs), among which is the universalization of basic sanitation services for the population. This way, we could say that these initiatives are helping the country in international negotiations related to climate change, as they help to reduce emissions of polluting gases, such as CO₂ and methane.

Keywords: Sanitation, institutions, Counties, Governance, Sustainable development.

INTRODUCTION

“To think globally, act locally.”

Ulrich Beck

After a long period of debates on the necessary changes to promote the restructuring and modernization of the

basic sanitation sector in Brazil, Law 14.026 was approved, in July 2020, the new “Legal Framework for Sanitation”. The new legislation established competition for contracts with municipalities through a bidding process, through the concession of regional blocks of municipalities, and defined goals to universalize service to the population by 2033. This way, better legal conditions were created for the start of a new investment cycle in the sanitation sector in the country.

Reflection on the emergence of municipal action in the basic sanitation sector and the transformations that have taken place in the sector in recent decades help us to better understand the relevance of the institutional changes proposed by the new legal framework for the modernization of governance and universal service to the population in the services of basic sanitation in the country. Based on the analysis of data from the National Sanitation Information System (SNIS), of the Ministry of Regional Development (MDR), it was possible to verify the emergence of municipal action in the sector, a movement on a national scale and with a relevant contribution to improving the indices of service to the population. The new political-institutional arrangement was based on municipalities that did not renew old contracts with state companies and implemented initiatives with the objective of providing universal service to the population, with more efficiency and effectiveness. An initiative with relevant environmental impacts, promoting the reduction of emissions of polluting gases that cause the greenhouse effect, such as CO₂ and methane, and the release of sewage into the environment, adapting the country to sustainable development proposals and, therefore, helping to meet the goals of the Paris Agreement, to keep the Earth's average temperature rise in the range of 1.5°C to 2°C above pre-industrial levels.

Another important contribution of this experience was the better adaptation of the country to the 2030 Sustainable Development Goals (SDGs) of the United Nations - UN. Targets relevant to basic sanitation are contained in SDG 6-Drinking Water and Sanitation: "Ensure the availability and sustainable management of water and sanitation for all". However, sanitation is related to several SDGs, such as: 3-Health and Welfare; 10-Reduction of Inequalities; 11- Sustainable Cities and Communities; 13-Action Against Global Climate Change; 14-Life in Water; and, 15-Earth Life.

This way, efforts to modernize the sanitation sector constituted an important asset for the country in international negotiations related to climate change, as they contributed to the reduction of polluting gas emissions. In addition, such initiatives have generated a benefit for the country in international economic relations more broadly as environmental and health requirements have gained increasing importance in recent decades. It is worth noting that international economic relations play a fundamental role in the economic development of countries, contributing to: expansion of the flow of foreign trade and attraction of foreign direct investment; foreign exchange generation; flow of part of the domestic production to other markets; access to goods and services not produced domestically; expansion of production capacity; and, access to technologies, among other benefits.

In this sense, this article reflects on the emergence of municipal action and its contribution to the modernization of the basic sanitation sector in Brazil in recent decades. In addition to the introduction and bibliographic references, this article consists of three sections. The second section highlights the contribution of sanitation modernization to well-being and competitiveness gains.

The third section presents an analysis of the dynamics of the participation of municipalities in the sector. Finally, the fourth presents some final considerations.

WELL-BEING AND COMPETITIVENESS GAINS

"It doesn't matter the color of the cat, it matters that the cat kills the mouse"

"Reform is like riding a bicycle if you stop and fall."

Deng Xiaoping

In the 21st century, the country still has social indicators in sanitation that are incompatible with being one of the ten largest economies in the world. A situation that reduces the population's quality of life and limits the country's potential for sustainable development. If it were possible to summarize, we could say that, in addition to the modernization of legislation in the sanitation sector, the main challenges faced today would be to increase investments to expand and modernize social infrastructure and structure competitive governance, capable of raising the necessary resources and increasing efficiency and effectiveness.

In the age of knowledge, in a scenario characterized by the intensification of the globalization process of the world economy, cities have become increasingly important for the development of countries because they are the stage of major trends in the world economy in the 21st century, such as the concentration of the population in urban areas and related issues such as: housing, mobility, employment, education, innovation, smart cities, health, food, sanitation, water and security.

In Brazil, cities still face major sanitation and housing problems, needing to improve competitiveness in various sectors of economic and social infrastructure to provide greater well-being to the population and greater

economic competitiveness, thus achieving greater capacity to attract investments. needed to generate more jobs and improve the population's quality of life.

Thus, cities need a long-term project, with a vision of the future, capable of making them more resilient to the great challenges they will face in the 21st century, providing them with competitive systems in areas such as education and innovation, mobility, health, sanitation and safety, as well as having legislation that facilitates doing business efficiently, effectively and with low environmental impact. Finally, cities need to implement a project that stimulates innovation, entrepreneurship and gains in competitiveness in a sustainable way. With basic sanitation constituting a fundamental piece in this puzzle, capable of improving the population's quality of life, providing sustainable development and positioning the country competitively in the international scenario.

The modernization of the sanitation sector generates several benefits for national development. A first benefit is the increase in investments in the sector and the respective contribution to the increase in GDP and the creation of jobs. Between 2011 and 2019, for example, investments in the sector rose from BRL 8.3 billion to BRL 15.7 billion, with the new legal framework it is expected that investments will show more expressive increases in the coming years. For the period 2020 - 2033, the Brazilian Association of Private Concessionaires of Public Water and Sewage Services - ABCON estimated that direct investments in the sector will reach R\$ 498 billion by 2033 and that the intermediate effects will reach R\$ 379 billion, with an impact total in the national economy of BRL 1.4 trillion in the period (ABCON-SIDCON, Panorama 2021).

A second benefit can be observed when the new social infrastructure comes into operation,

with the improvement of water supply and sewage collection and treatment, improving the health and well-being indicators of the population and contributing to the reduction of inequalities in Brazilian cities. The World Health Organization (WHO) estimates that for every US\$ 1 invested in sanitation, US\$ 4 are saved in public health (Instituto Trata Brasil). A third benefit is environmental, due to the reduction of gas emissions that generate the greenhouse effect and the end of the release of untreated sewage into rivers, lagoons and oceans. A fourth benefit arises from the better qualification of the country in relation to international sanitary requirements, through practices that reduce the risks of limiting international trade, due to diseases transmitted by insects, such as flies and mosquitoes, with the risk of affecting productivity and quality of agricultural production and exporting diseases to other countries.

An additional benefit could be achieved if biodigesters were installed in sewage treatment plants (ETEs). Biodigestion systems generate biogas and biofertilizer, with biofertilizer contributing to cost reduction in agriculture and biogas being used in the kitchen stove, in vehicles and in the generation of electricity. Therefore, a benefit capable of generating additional revenue for sanitation companies.

On the other hand, climate change has shown that there are environmental limits to economic production, with this situation posing additional challenges for the development of countries in the 21st century and showing that the adoption of the concept of sustainable development has become necessary, covering the environmental, social and economic sustainability. In other words, it is necessary to prioritize initiatives such as energy conversion to clean sources, preservation of forests, planting trees, water supply and sewage collection and treatment, and implementation of circular economy

principles. In Brazil, it is opportune to rethink the meaning of the purpose of national development, having as a reference that economic production, since the colonial period, happened in a way associated with the generation of inequalities, poverty and serious environmental impacts, being, therefore, necessary “ think globally and act locally” and promote sustainable development. With emphasis on basic sanitation, for meeting a basic human right and for the contribution in environmental terms.

This way, the modernization of the sanitation sector could be seen in a broader way, ranging from the recovery of vegetation cover, to protect the natural sources of water in hydrographic basins, to social infrastructure in cities, to end the release of sewage. in the rivers, highlighting that the recovery of springs helps to increase the volume of water in the rivers and that reforestation protects the springs and contributes to the absorption of carbon dioxide and the production of oxygen. Brazil, with a continental territory, cannot give up providing this service to the world, being a net producer of oxygen for the planet and preventing the worsening of climate change. Trees are important for people’s health and quality of life in cities. Currently, the international negotiation equation related to environmental issues, such as the Climate Convention, starts from the observation that the climate is changing and that the stock of CO₂ in the atmosphere is very high, making it necessary for countries to present proposals to face such a situation. situation. Thus, the countries’ negotiation strategy must be based on the CO₂ stock that could be absorbed and the amount of polluting gases that could not be emitted, that is, a proposal capable of neutralizing emissions or reaching the condition of net absorber of polluting gases. Thus, Brazil could present itself as a solution, with a plan to provide an environmental service

based on preserving forests, significantly reducing fires and planting billions of trees, for example, one billion trees every five years.

THE EMERGENCY OF MUNICIPAL PERFORMANCE IN BASIC SANITATION

State sanitation companies, founded in the early 1970s, came to hold, in practice, the monopoly of water and sewage services in their respective territories throughout the country in the last five decades. However, these companies were not able to fully meet the demand, with the country reaching the 21st century in a still precarious situation in the area of basic sanitation. A condition that generated strong effects on the high inequality of income existing in the country and that does not suit the position of one of the ten largest economies in the world, with such a situation even having serious impacts on public health, education and productivity. Three indicators summarize the reality of the sanitation sector in Brazil today, contributing to the dimensioning of the challenges that need to be overcome to achieve universal service to the population, namely: 16.3% of the population is not served by the water supply network. Water; 46% of the population does not have access to a sewage collection network, 51% of the sewage collected is not treated and 39.2% of the drinking water provided by sanitation companies is lost (SNIS, 2019).

This situation leads us to reflect on the causes that generated the sector’s low performance for decades, despite having a high potential for cash generation. The existing sectoral balance simply failed to fully meet the demand for sanitation services, whether for political or economic reasons. A situation that was based on firms resulting from a sum of contracts between state companies and municipalities that transferred the right to manage sanitation services in

their respective territories. However, this model did not achieve universalization in the services provided until the first decades of the 21st century.

The first signs of change in the sector occurred in the early 1990s, when there was an evident movement towards the collapse of the various “contract castles” set up by state companies as a result of the emergence of municipal action, with the objective of taking over the management sanitation in their territories. A process characterized by the questioning of the monopoly position of state companies and the beginning of the construction of a new political-institutional arrangement; with emphasis on the participation of small and medium-sized municipal, public and private companies, and autarchies, which started to compete with state companies.

However, despite the ongoing changes, performance indicators fell short of what was necessary to achieve universal service to the country's population. With this situation leading to the emergence of proposals to reform legislation with the objective of modernizing basic sanitation in the country, as observed in the enactment of Law 11,445 in 2007. The new Law established new guidelines, rules and management instruments for the sector, with the objective of improving efficiency and effectiveness, as well as achieving universal service to the population. According to data from the 2020 IBGE Basic Sanitation Survey, the percentage of active residential economies with sewage collection in Brazil, in relation to the total of permanent private households, rose from 43.6% in 2008 to 50.8% in 2017, while the percentage of municipalities with biological sewage treatment reached only 36% (IBGE, 2020). Additionally, water losses in the country remained at a high level, with an average of 39.7%, therefore, well above the rates of OECD countries, such as: Singapore

3.7%, Australia 10.3%, United States United States 12.8%, Poland 17.2% and Portugal 18.4% (IBNT).

In 2019, the service rate of state sanitation companies was still below the desirable level in the water supply service in urban areas, with an average of 86%, after reaching a maximum of 92% in 2007. Urban sewage service rose from 23.5% in 1995 to 44.3% in 2019. However, although the near doubling of care in 21 years was a great achievement, it must be noted that the average growth rate was low, with universalization still remaining distant (GRAPHIC 1).

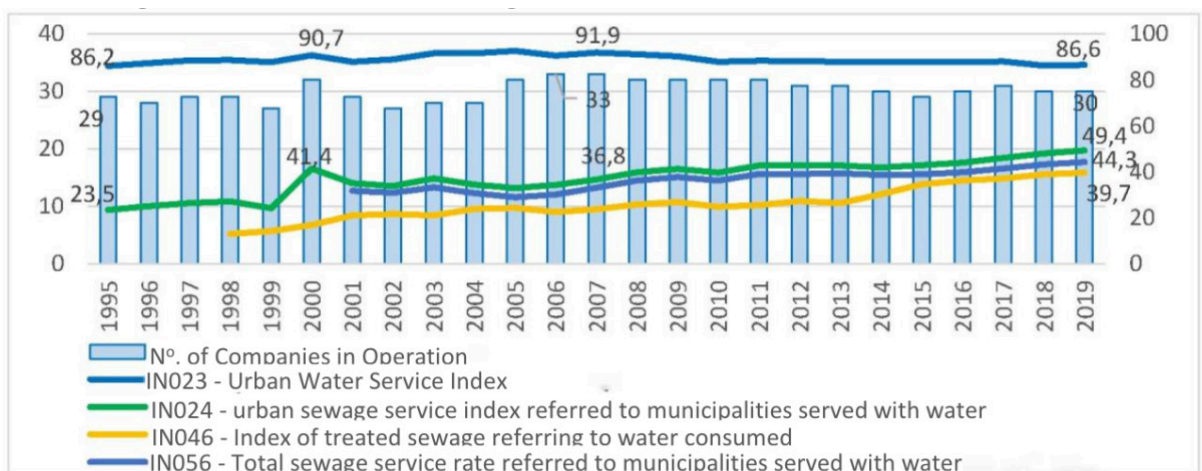
Thus, in view of this scenario, a new movement began in the country demanding a new reform of the sector's legislation, with the capacity to improve governance and accelerate investments with the objective of achieving universalization in meeting demand in a shorter period of time. Thus, after debates in the National Congress, Law Number 14,026 of July 15, 2020 was enacted, establishing new guidelines for the universalization of basic sanitation in the country, defining that by 12/31/2033 at least 99% of the population will have access to drinking water and 90% of the population will have sewage collection and treatment services. The legal framework established the end of “Programme Agreements”, celebrated and renewed between states and municipalities, without bidding, defining competition through bidding for “Concession Agreements”, via the concession of regional blocks of municipalities. The National Water Agency – ANA started to regulate the sector throughout the country, being responsible for the reference standards for the sector. The legal framework included the common concession (Law 8.987/1995), with the concessionaire's remuneration for investments and service provision being based on the tariff paid by the end user, and Public-Private Partnerships

- PPPs (Law 11.079/2004): sponsored concession, concessionaire remunerated by the tariff plus a consideration paid by the granting authority; and, administrative concession, concessionaire remunerated by the granting authority, in this case the creation of the PPPs Guarantee Fund becomes essential. Additionally, Decree 10,710/21, of 05/31/2021, established the methodology for proving the economic and financial capacity of basic sanitation service operators to meet the universalization goals defined in the sanitation legal framework.

Thus, it is important to emphasize the importance of the initiative of the municipalities for the contribution to the transformations observed in the sanitation sector since the 1990s. In the beginning, the movement was concentrated in the Southeast region, but later it spread to other regions of the country, with the municipal action characterized by greater efficiency and effectiveness, as well as greater effectiveness in delivering quality public services to the population, a unique experience in the history

of the country. In 1995, 26 municipal sanitation units were in operation in the country, 22 of which were autarchies, two public companies and two direct public administrations. Of this total, 19 units were in the Southeast (73%), five in the South, one autarchy in the Northeast and another in the Center-West. The first municipal private concession, in Limeira-SP, was tendered in June 1995, with universal service being achieved in 1999. In 2019, the municipal units reached 1,610 initiatives: 66.2% direct public administrations, 26.5% municipalities, 6.9% private companies, 0.4% public companies and 0.3% social organizations (TABLE 1). In geographic terms, the concentration decreased, with the participation of the Southeast falling to 46.6%, and of the other regions rising to 21.4% in the South, 19.1% in the Northeast, 8.2% in the Midwest and 4.7% in the North (SNIS, 2020).

The greater municipal participation in sanitation was fundamental for the changes in sectorial governance observed in this period, such as the diversification of the legal nature of the firms and the change from



Graph 1. Brazil. Basic sanitation. Public Administration Mixed Economy Societies and Water and Sewage Service Rates (% Average) - 1996 -2019.

Source: SNIS, 2020. (Own elaboration).

monopolistic to competitive practices, as well as the regional performance, covering groups of municipalities, in a similar way to the arrangement contemplated in the new legal framework, through the formation of micro-regions of municipalities. The municipal initiative gained national scale, improving efficiency and effectiveness in service in their territories and putting pressure on state companies to seek gains in competitiveness. An initiative that improved systemic competitiveness and reflected the strengthening of democratic institutions and the market economy in the country. A movement that promoted administrative decentralization, included small and medium-sized companies and helped to improve sectoral regulation (TABLE 1 and GRAPHICS 1 to 5).

A unique experience that showed the importance of municipalities and administrative decentralization for the consolidation of democracy in the country. In a way, an experience that has parallels in the history of the United States on the importance of small towns for democracy, as pointed out by Alexis de Tocqueville, in the classic *Democracy in America* (1899), when

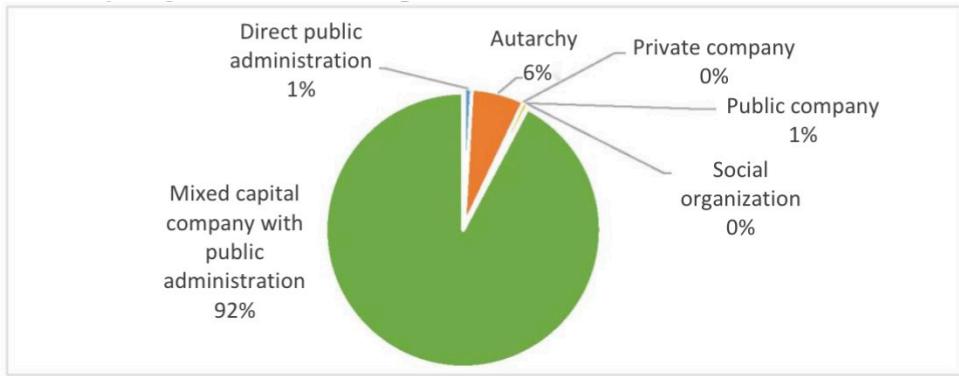
he highlighted the importance of small towns and administrative decentralization to the success of democracy in the United States in the 19th century, and listed three main causes for the flourishing of democracy: the Federal Union, small town institutions (township institutions) and the force of law. He also stressed that the absence of administrative centralization weakened the tyranny of central power.

The initiative of these municipalities represented a great effort in favor of sectoral modernization, with the new forms of legal nature causing relevant impacts on sectoral governance and improving the quality of service to the population. The delay in establishing a new legal architecture, capable of promoting sectoral modernization more quickly, made municipalities in better conditions to generate cash in sanitation begin to seek new forms of management for the sector in their territories. Despite being relevant cash generators, these municipalities did not have their respective demands met, especially in the area of sewage collection and treatment. In other words, the effectiveness of the previous model was questioned, gradually being replaced as several municipalities

Legal Nature	1995	2000	2005	2010	2015	2019
direct public administration	2	25	107	700	902	1.063
Autarchy	22	145	251	404	413	426
Private company	0	13	25	54	89	110
Public company	2	1	6	5	5	6
social organization	0	0	0	3	2	5
Mixed capital company with public administration	28	33	33	34	31	30
Total	54	217	422	1.200	1.442	1.640

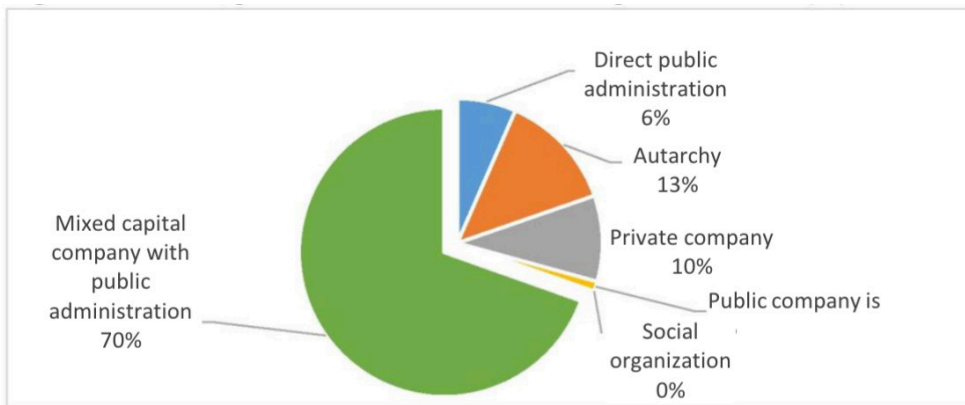
Table 1. Brazil. Basic Sanitation (Water and Sewage) - Evolution of Legal Nature of Companies - 1995 - 2019 (Number of units).

Source: SNIS, 2020. (Own elaboration).



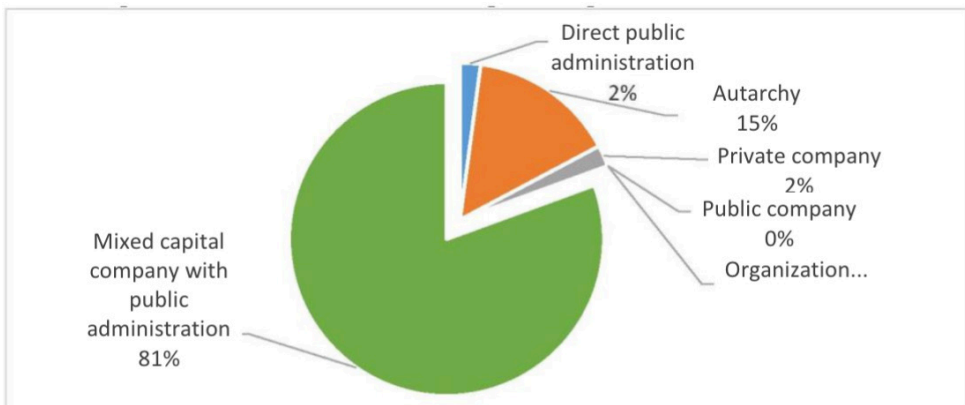
Graph 2. Brazil. Total resident population of municipalities with water supply, according to IBGE, by Legal Nature of Companies - 1995. (%).

Source: SNIS, 2020. (Own elaboration).



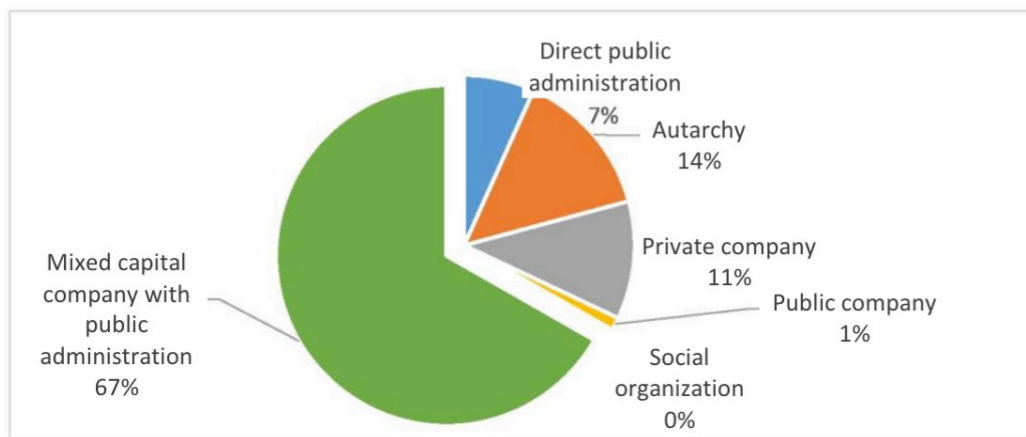
Graph 3. Brazil. Total resident population of municipalities with water supply, according to IBGE, by Legal Nature of Companies - 2019. (%).

Source: SNIS, 2020. (Own elaboration).



Graph 4. Brazil. Total resident population of municipalities with sanitary sewage, according to the IBGE, by Legal Nature of the Operating Company - 2000.

Source: SNIS, 2020. (Own elaboration).



Graph 5. Brazil. Total resident population of municipalities with sanitary sewage, according to IBGE, by Legal Nature of the Operating Company - 2019.

Source: SNIS, 2020. (Own elaboration).

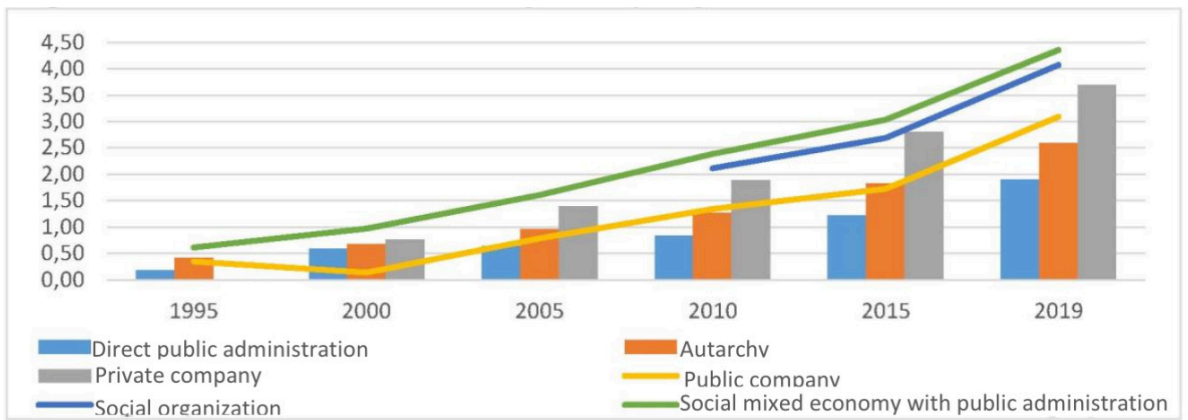
stopped renewing contracts with state companies and began to resolve the issue of sanitation with their own solutions, through municipal public companies, autarchies and private companies via concessions and public-private partnerships (PPPs). On the other hand, this new sectorial dynamic made state companies look for alternatives to expand and modernize their infrastructure, increasing investments to better serve the population and guarantee the maintenance of contracts with other municipalities.

During this period, several initiatives were highlighted in the Southeast and South regions, such as the pioneering spirit of Limeira in São Paulo and the experiences of Niterói and cities in the Lagos region in Rio de Janeiro. Another highlight in this phase was private participation through concession contracts and public-private partnerships (PPPs), such as: Odebrecht Ambiental, later acquired by the Canadian group Brookfield, which formed BRK Ambiental, with the participation of the FGTS Investment Fund; Águas do Brasil Group, with operations in Niterói and the Lagos region in Rio de Janeiro; and, AEGEA Group with a concessionaire in

the Lagos region, which won the auctions of the Sanitation Company of the State of Alagoas (CASAL) and of the State Water and Sewerage Company of Rio de Janeiro (CEDAE).

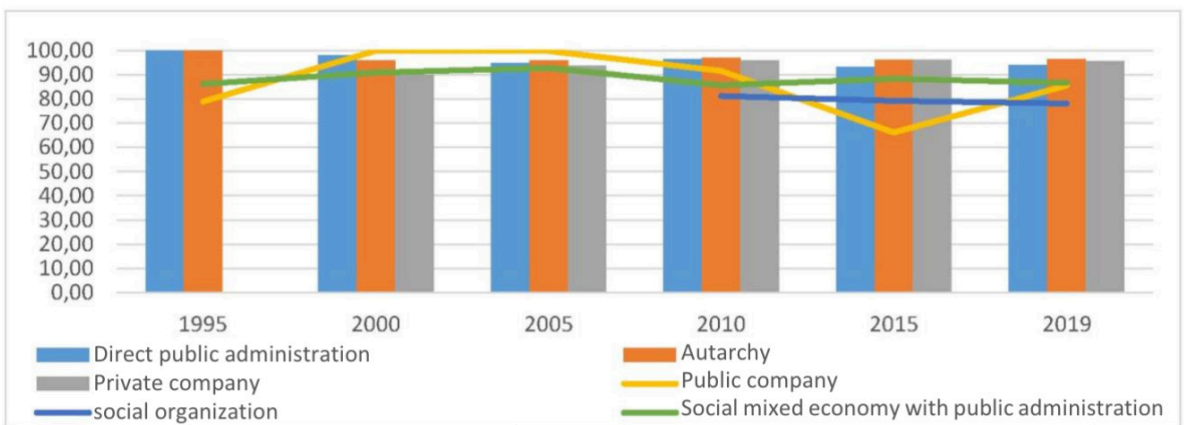
Another relevant aspect observed in this period was the questioning about the survival of the cross-subsidy model that served all municipalities, the largest and smallest municipalities, including those with unprofitable operations. In this sense, the proposal of regionalization through groups of municipalities, established by the new legal framework, represented a solution to attract investors to the sector and, thus, make possible the universalization of water supply and sewage collection and treatment, as observed in the most recent concessions of CASAL, CEDAE and CAESA - Companhia de Água e Esgoto do Amapá.

The comparative analysis of performance indices selected by groups of firms, according to the legal nature, presented in graphs 6 to 10 below, clearly shows more efficient and effective performances in the legal forms of municipal initiatives in comparison with state sanitation companies, with emphasis on private concessionaires, given their ability to



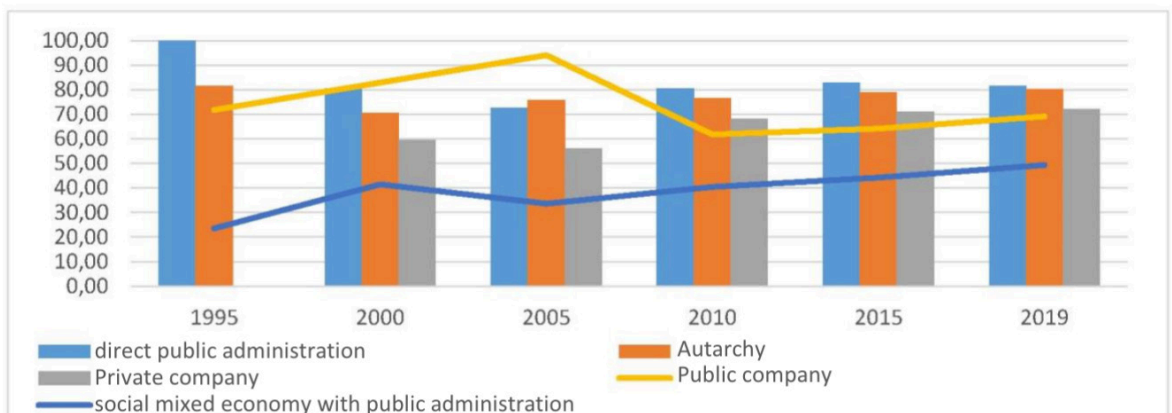
Graph 6. Brazil. Basic sanitation. Average Fee by Legal Form - 1995- 2019.R\$/m³.

Source: SNIS, 2020. (Own elaboration).



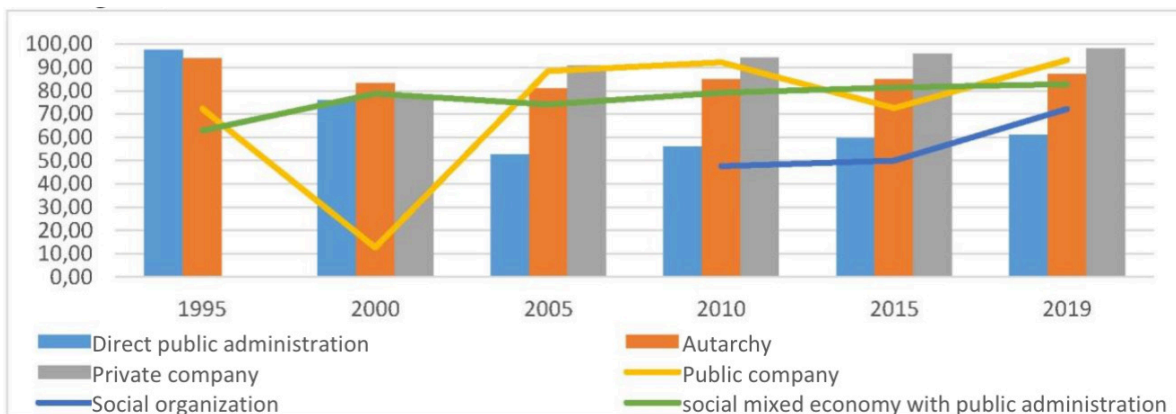
Graph 7. Brazil Basic Sanitation. Index of urban water service by Legal Form of Operation - 1995 - 2019 (% Average).

Source: SNIS, 2020. (Own elaboration).



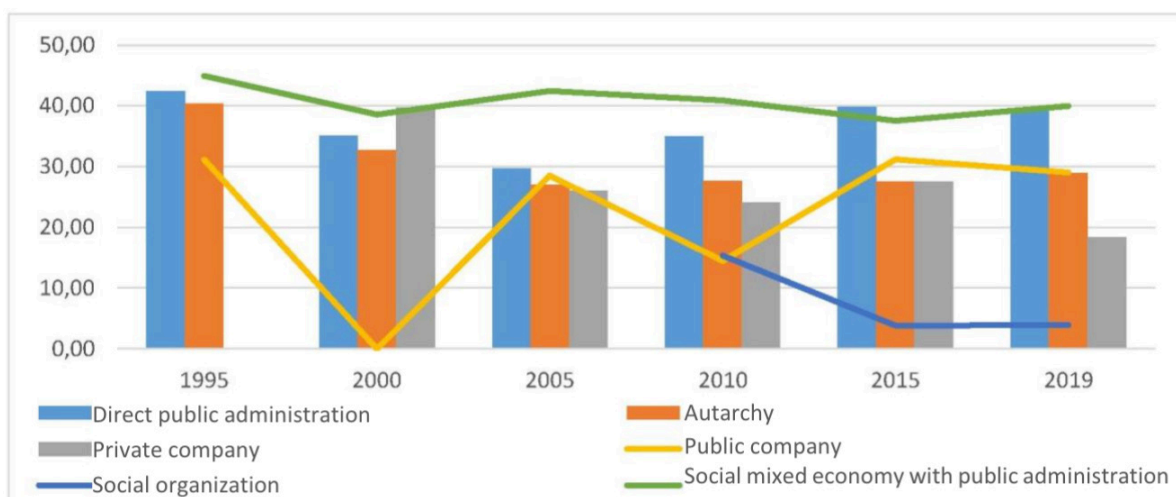
Graph 8. Brazil. Basic sanitation. Urban sewage service index referred to municipalities served with water by Legal Form of Operation - 1995-2019. (% Medium).

Source: SNIS, 2020. (Own elaboration).



Graph 9. Brazil. Basic sanitation. Hydrometer index by Legal Form of Operation - 1995 - 2019 (Average %)

Source: SNIS, 2020. (Own elaboration)



Graph 10. Brazil. Basic sanitation. Invoicing Loss Index by Legal Form of Operation - 1995 - 2019. (Average %)

Source: SNIS, 2020. (Own elaboration)

make the investments that the sector needs to achieve universal service to the population. In general, state companies showed lower average performance than other legal forms, despite the density of savings per connection and average tariffs being higher than other legal forms (GRAPHS 6 to 10).

FINAL CONSIDERATIONS

The emergence of municipal action in the basic sanitation sector in Brazil in the last three decades represented a unique example of the strengthening of democracy, human rights and the market economy in the country. The increase in municipal participation in the sanitation sector was accompanied by improved efficiency and effectiveness in the sector, with this experience managing to expand the population's access to sanitation services, increase competition in

the sector and contribute to increasing the competitiveness of the national economy. Thus, it would not be an exaggeration to say that the increase in municipal participation in the governance of the sector also contributed to the establishment of the new legal framework for sanitation in 2020. An initiative compatible with the demands to improve the population's quality of life and consolidate the competitive position of the country in international economic relations, with a view to the sector's contribution to mitigating the effects of climate change, as it helps to reduce polluting gas emissions and reduce the release of untreated sewage into rivers, lakes and oceans, adapting, thus, the country to international guidelines in favor of sustainable development, such as the 2030 SDGs and the Paris Agreement.

REFERENCES

- ABCON-SINDCON. Panorama da participação privada no saneamento 2021. <<https://www.abconsindcon.com.br/panoramas/>>. Acesso em: 28 ago. 2021
- BRASIL. Instituto Brasileiro de Geografia e Estatística - IBGE. Pesquisa Nacional de Saneamento Básico 2017, Rio de Janeiro, 2020. <<https://biblioteca.ibge.gov.br/index.php/biblioteca-catalogo?view=detalhes&id=2101734>>. Acesso em: 01 mar. 2021.
- BRASIL. MINISTÉRIO DO DESENVOLVIMENTO REGIONAL. Secretaria Nacional de Saneamento – SNS. Sistema Nacional de Informações sobre Saneamento: 25º Diagnóstico dos Serviços de Água e Esgotos – 2019. Brasília: SNS/MDR, 2020. 183 p.: il. <[https:// www. http://www.snis.gov.br/](https://www.http://www.snis.gov.br/)>. Acesso em: 01 mar. 2021.
- BRASIL. Lei n. 8.987, de 13 de fevereiro de 1995. Dispõe sobre o regime de concessão e permissão da prestação de serviços públicos previsto no art. 175 da Constituição Federal, e dá outras providências. Diário Oficial da República Federativa do Brasil, Brasília, DF, Publicado em: 14/02/1995, Seção: 1, Página: 1917. <<https://www2.camara.leg.br/legin/fed/lei/1995/lei-8987-13-fevereiro-1995-349810-publicacaooriginal-1-pl.html>>. Acesso em: 01 mar. 2021.
- BRASIL. Lei n. 11.079, de 30 de dezembro de 2004. Institui normas gerais para licitação e contratação de parceria público-privada no âmbito da administração pública. Diário Oficial da República Federativa do Brasil, Brasília, DF, Publicado em: 31/12/2004, Seção: 1, Página: 6. <<https://www2.camara.leg.br/legin/fed/lei/2004/lei-11079-30-dezembro-2004-535279-publicacaooriginal-22998-pl.html>>. Acesso em: 01 mar. 2021.
- BRASIL. Lei n. 11.445, de 05 de janeiro de 2007. Atualiza o marco legal do saneamento básico. Diário Oficial da República Federativa do Brasil, Brasília, DF, Publicado em: 08/01/2001, Seção:1,Página:3. <<https://pesquisa.in.gov.br/imprensa/jsp/visualiza/index.jsp?data=08/01/2007&jornal=1&pagina=3&totalArquivos=64>>. Acesso em: 01 mar. 2021.
- BRASIL. Lei n. 14.046, de 15 de julho de 2020. Atualiza o marco legal do saneamento básico. Diário Oficial da República Federativa do Brasil, Brasília, DF, Publicado em: 16/07/2020, Edição: 135, Seção: 1, Página: 1. <[https:// www. https://www.in.gov.br/web/dou/-/lei-n-14.026-de-15-de-julho-de-2020-267035421/](https://www.in.gov.br/web/dou/-/lei-n-14.026-de-15-de-julho-de-2020-267035421/)>. Acesso em: 01 mar. 2021.

BRK Ambiental. Relatório ESG 2020. Visão e Impactos em Sustentabilidade. <https://brkambiental.com.br>. Acesso em: 08 mai. 2021.

INSTITUTO TRATA BRASIL. Saneamento e Saúde. <http://www.tratabrasil.org.br/saneamento-e-saude>. Acesso em: 08 mai. 2021.

THE INTERNATIONAL BENCHMARKING NETWORK FOR WATER AND SANITATION UTILITIES (IBNET). <https://www.ib-net.org/>. Acesso em: 08 mai. 2021.

TOCQUEVILLE, Alexis de. Democracy in America. American Studies. University of Virginia, 1899. Disponível em: < <http://xroads.virginia.edu/~Hyper/DETOC/home.html> >. Acesso em: 08 mai. 2021.