

Synthesis Report

**Policies, Institutions, Regulations,
and Expenditures in the Water and
Sanitation Sector in Brazil**

June 2021



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Design of the report and photos by: Jose Ramon Galvez Perez/
Adriana Carolina Rocha Albuquerque.



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Why the water sector?

More than 40 million people in Brazil still lack safe drinking water and more than 100 million do not have sewage collection, creating serious health hazards. Brazil faces multiple diseases that are related to water and sanitation, such as dysentery, dengue, zika, chikungunya, and yellow fever. Strengthening the WSS sector's resilience will help drive down incidence of all these diseases.

Creating an efficient and fair WSS sector is also crucial for effective response to COVID-19 in Brazil.

Frequent hand washing with soap is one of the basic measures for preventing COVID-19 infection. This means that access to high-quality WSS services must be ensured in homes, health care facilities, schools, and other public spaces, to protect against this and any future pandemics.

Bolstering Brazil's WSS sector will do more than improve health—it will raise the quality of life and help ensure long-term development and prosperity. Substandard WSS exacts a high economic toll because more people are absent from work due to preventable illnesses, lowering overall productivity. In 2019, the economy of Brazil suffered close to US\$1.3 billion of productivity losses related to diseases stemming from unimproved or lack of WSS, Global Burden of Disease data indicates. Better WSS can also enhance food security and education, by reducing the number of days that children miss school.

Recent estimates of the burden of disease data show that the state with the lowest productivity losses due to diseases from lack of WSS is Distrito Federal, with 360 days lost on average¹. The state with the highest productivity loss per year is Santa Catarina, at 18,300 days. These figures underline the massive inequities in WSS access in Brazil.

Universal access to WSS services will reduce Brazil's annual health costs and out-of-pocket expenditures by up to R\$1.45 billion (US\$270 million), data from the National Confederation of Industry suggest². For each R\$1 allocated to the sector, R\$2.50 is generated in associated chains, and for each R\$1 billion (US\$180 million) invested, 60,000 jobs are generated³. The gains go beyond lower health costs, however, to include such measures as lower environmental clean-up costs. Hutton (2012)⁴ estimates a total return of US\$8.93 in Brazil for every US\$1.00 invested in expanding WSS coverage towards universalization. That is more than double the World Health Organization's estimate for the global ratio.

However, progress in improving WSS services in Brazil has been slow, with large gaps in coverage and financial sustainability when compared to those of OECD countries. In 2007, when the Law of National Guidelines for WSS 11,445/07 was passed to bolster the sector, water service coverage in Brazil stood at 81 percent and sewerage coverage at 42 percent. The law, however, proved ineffective. In the decade after its passage, coverage growth rates slowed. By 2018, water service coverage had expanded barely 3 percentage points to 83.6 percent, while sewerage coverage was up just 11 percent points to 53 percent.

¹One DALY (Disability Adjusted Life Year) represents the loss of the equivalent of one year of full health. DALYs for a disease or health condition are the sum of the years of life lost (YLLs) due to premature mortality and the years lived with a disability (YLDs) due to cases of the disease or health condition in a population. The jurisdiction with the lowest DALY loss is Distrito Federal (360 days), while the highest is found in Santa Catarina state (18,300 days). The estimates apply only to the working-age population.

²CNI (Confederação Nacional do Indústria). 2017. 'O financiamento do investimento em infraestrutura no Brasil'.

<http://www.portaldaindustria.com.br/publicacoes/2016/7/ofinanciamento-do-investimento-em-infraestrutura-no-brasil-uma-agenda-para-sua-expansaosustentada/>

³Ministerio de Desenvolvimento Regional (MDR). 2020. Novo Marco do Saneamento entra em vigor e trará avanços econômicos, na saúde e no meio ambiente em todo o País. MDR-SNISA.

⁴Hutton, G. 2012. "Global Costs and Benefits of Drinking-Water Supply and Sanitation Interventions to Reach the MDG Target Universal Coverage." World Health Organization, Geneva, Switzerland.

Recognizing that its universalization goals remain far off, in June 2020 Brazil passed a new Water and Sanitation Law that aims to encourage increased investment in the sector and improve WSS quality and service coverage. The new legal framework for WSS, Law 14,026/2020, was approved on June 24, 2020, by the Brazilian Congress. It enhanced the sector's regulatory system, establishing 2033 as the target for achieving universal access to WSS across the country. WSS services are an integrated set of essential activities that need comprehensive planning, regulation, and monitoring if Brazil is to achieve the ambitious 2033 target, increase general service quality and performance, and leverage public and private finance to make the best possible use of scarce resources.

Study Objectives

To raise momentum in Brazil's water sector, and respond to demands from government, the World Bank initiated two analytical studies. These were the Water Supply and Sanitation Policy, Institutions and Regulation Assessment, Diagnostics Report (WSS PIR) and the WSS Public Expenditure Review (WSS PER). The objective of WSS PIR was to establish an analysis of the sector that could serve as a basis for formulating specific reform actions, identifying challenges, and crafting mechanisms to promote sustainable change through good practices. The objective of WSS PER was to analyze the trends, barriers, and opportunities of public expenditures to improve efficiency and equity of the sector.

This synthesis report summarizes the key findings of the two analytical works, WSS PIR and WSS PER, and offers possible options for reform. Based on key cross-cutting findings about the policy, institutional, regulatory, and fiscal frameworks of Brazil's WSS sector, the recommendations were formulated to help policy makers and other sector stakeholders implement the new legal and regulatory framework to maximize benefits for the country.

Methodological Framework

Both the WSS PIR and WSS PER studies are part of the Water Global Practice's initiatives and use standard methodological approaches to assure quality and consistency of findings. WSS PIR contains the analysis of the water sector's current level of performance; an institutional stakeholder mapping along the focus areas identified by use of an Institutional Development Tool (IDT)⁵; "Strengths, Weaknesses, Opportunities, and Threats" (SWOT) analysis; and proposed reform options in light of the new WSS legal framework that was approved in 2020. The PIR's diagnostic is based on the analysis of existing evidence, data, and research; interviews, surveys, and consultations with the main Brazilian sector stakeholders; and analysis of the WSS sector based on a literature review.

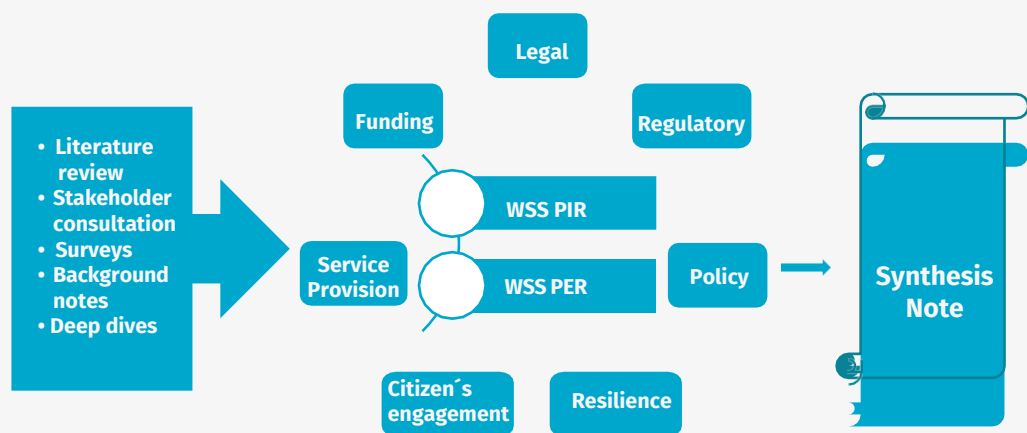
The WSS PIR breaks down current strategy and considerations into seven themes. These are (1) legal framework, (2) policy and executive functions, (3) regulatory functions, (4) service provision and delivery models, (5) engagement of community users, (6) sector financing, and (7) resilience. WSS PER identifies how public expenditures function and contribute to development outcomes (or fail to do so). The analysis is then used to identify reforms that would make public spending more effective, efficient, and equitable, and to detail the sector's information and financial gaps. The WSSPER studies the vulnerabilities of budget cycles allocated to the sector, and the main expenditure trends that underlie existing financial and investment gaps. Figure 1 summarizes the building blocks of the analytical framework used.

⁵ The IDT provided a list of targeted questions to identify institutional gaps and priority areas and collected suggestions on activities in order to bridge gaps and strengthen institutions in the WSS sector.

Structure of this Synthesis Report

The report consists of five sections. Section 1 summarizes Brazil's needs and objectives in WSS and the methodological framework for achieving them. Section 2 details current levels of performance and challenges that water service providers in Brazil face concerning quality of services, institutional modality of service delivery, community engagement, and resilience building. Section 3 provides diagnostics of the legal, policy, and regulatory framework in Brazil and summarizes the key opportunities and challenges in implementing the new water and sanitation law. Section 4 summarizes investment needs for achieving Brazil's 2033 universalization goals, as well as the efficiency, equity, and effectiveness of the sector's public expenditures. Finally, Section 5 draws conclusions and identifies reform options that would support the implementation of the new water and sanitation law, in the form of a policy matrix.

FIGURE 1
Analytical Framework for WSS PIR and WSS PER



Section
2

Performance of the Sector and Service Delivery Models

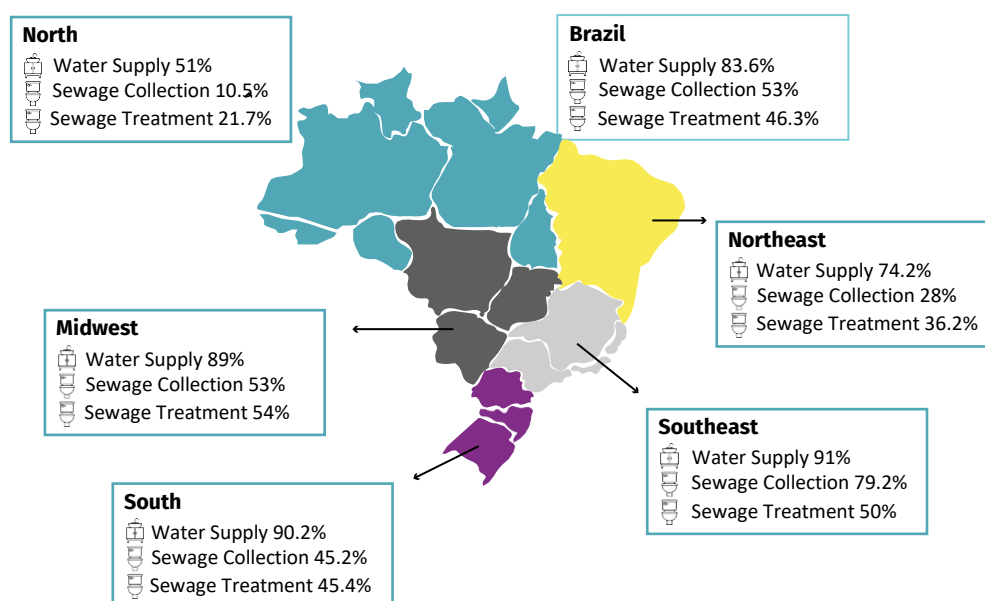
WSS Sector Performance in Brazil

WSS service coverage is well below targets and varies greatly among states and regions. According to data from the National Information System of WSS (SNIS), in 2018 about 84 percent of Brazil's people had access to water supply from a network and about 53 percent had access to the sewerage network. Only 46 percent of the sewage generated that year was treated. Major geographical inequities underlie these rates. For example, water supply ranges from 91 percent in the Southeast region to 51 percent in the North. Figure 2 illustrates WSS variations by region.

Universalization goals remain far off by almost every measure. For instance, ANA (2019)⁶ showed that 31 percent of the country's people live in areas that have low water assurance. This means they are facing rationing, network collapse, or alerts in periods of drought, forcing them to seek new water sources. About 41 percent of Brazilians live in areas whose production system requires expansion. Only 27 percent live in municipal areas with satisfactory WSS services. Seventy-eight percent of people are predominantly supplied by surface water, while for 22 percent the source is mostly groundwater.

FIGURE 2

WSS coverage in Brazil



Source: Sistema Nacional de Informações sobre Saneamento (SNIS), 2018.

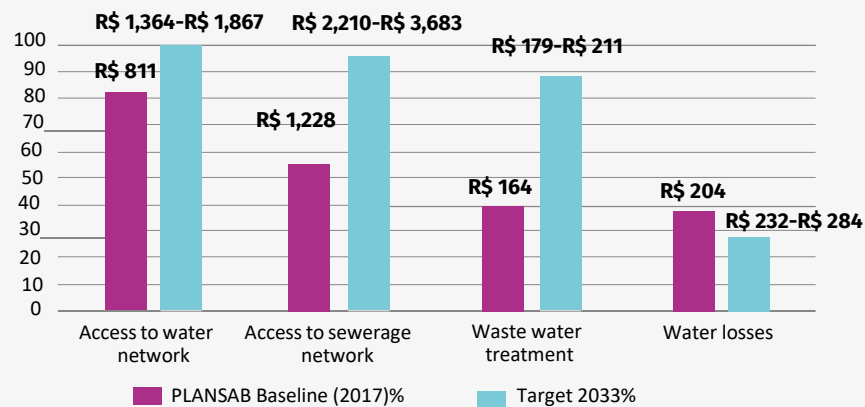
⁶ The municipal tax burden is determined primarily by two taxes: Tax on Services of any Nature (ISS) and the Property Tax (IPTU). While the first is an indirect tax, levied on the service sector's production, the second is a direct tax on urban real estate. Between 1980 and 2016, these two taxes accounted for, on average, more than 60 percent of the total municipal tax burden. In 2016, this rate was 57.7 percent.

Significant improvements are expected to be required to achieve the country's 2033 WSS goals. The figure 3 below shows the investments required for achieving the 2033 coverage targets, broken down into water and wastewater, as well as the operational performance indicated as percentage of non-revenue water, comparing PLANSAB's baseline from 2017 and the 2033 targets.

The government updated the estimates of investment needs for WSS to about R\$700 billion (US\$130 billion). The federal government would provide about 59 percent of funds, with the remaining 41 percent expected to be funded from state and municipal governments, private service providers, and international bodies. Currently, the main funding comes from public financial institutions such as Caixa (CEF) and the National Bank for Economic and Social Development (BNDES).

FIGURE 3

WSS targets for coverage (%), investments (R\$ billion), water losses (%) between 2017 and 2033



Note: Vertical axis in graph are % coverage and water losses.

Source: PLANSAB, 2017. SIOP, SNIS, OFSS, 2017 and Oliveira, 2019. *Impactos e consequências da Medida Provisória nº 844/2018 para o saneamento básico e a população brasileira.* FNUCUT.

WSS service providers in the North and Northeast regions suffer the most from operational inefficiencies. In 2018, the rate of water loss (non-revenue water) in Brazil overall was 38.5 percent. This means that that percentage of the volume of water made available was either not ultimately used by customers (leaked between sources and users) or not invoiced. The North and Northeast regions presented the highest rates of loss, at 55.5 percent and 46.0 percent respectively. A survey by Sindcon (Sindicato Nacional das Concessionárias Privadas de Serviços Públicos de Água e Esgoto) and ABCON (Associação Brasileira das Concessionárias Privadas de Serviços Públicos de Água e Esgoto) shows that, in general, state, and municipal WSS service providers lack a balance between revenue (the amount charged per cubic meter) and expenditure (cost of services per cubic meter of water supplied and sewage disposal).

The North and Northeast regions are the worst performers, due to the lack of tariff increases in regions where many people cannot afford water service. The average tariff charged in the Northern region is R\$3.59/m³, while the expense is about R\$3.95/m³. In the Northeast, the tariff is R\$4.00/m³, while the average expense is R\$3.90/m³ but with higher non-revenue water and with a lower customer base.

In contrast, service providers in the Southern region are often able to reach full cost recovery from tariffs with more customer base, requiring very little subsidies from the government⁷.

Like with service, there is broad spatial inequity in the investment spending that is meant to improve WSS. Currently 50 percent of urban water investment is concentrated in only five states, São Paulo, Rio de Janeiro, Minas Gerais, Rio Grande do Sul, and Santa Catarina. This type of inequality has translated into differing progress toward goals of universalization in different states. The five top states will require annual investments in urban WSS systems of about 0.7 percent of their GDP. But other states with relatively high urbanization, such as São Paulo or Rio de Janeiro, which have historically had lower investments, will require greater investment, at least 1 percent of GDP, to reach the same goal. In the rest of the states, which have special challenges of expanding WSS coverage in rural areas, investment expansion of 1.05 percent of GDP on average will be needed to meet the objective.

The level of inequality in Brazil's WSS sector is linked mainly to the social and economic situations of the regions and their capacity to fund investments. On one hand, the Southeast regions have higher per capita income and population density than the rest of the country, resulting in higher tax collection and a higher ability to afford investments. On the other hand, the North has large rural territories and few densely populated areas, which makes it difficult to create economically feasible WSS services. Rural systems typically have higher cost of construction due to the long distances between households and the relatively small numbers of customers.

Coverage of the piped water network has barely changed in the past decade. Sewage network coverage has achieved laudable but still far from adequate gains. Again, major discrepancies exist in coverage, with city people having far higher access to service than their rural compatriots. A benefit incidence analysis (page 8) shows the degree of those inequities.

The SNIS is widely viewed as a good data system, however this system can improve its quality of information. This is because the WSS operators themselves provide the data employing differing definitions and standards. There is no outside audit of the information. This is another example of shortcomings that can arise from the WSS system's fragmentation. SNIS is a comprehensive information and monitoring system, with indicators that cover several dimensions of WSS, including financial performance, operational and technical characteristics, and other important attributes. However, the system must be reformed to be able to collect the information systematically and periodically, with strict quality controls for self-reported data uploaded by municipalities and providers. This will substantially improve the quality of sectoral data used for decision making and planning purposes. Statistical validation of information and better coordination with IBGE can also enhance the quality and reliability of statistical information contained in the SNIS.

Benefit Incidence: Geographical Exclusion and Decile Distribution of WSS expenditures

Data from the Brazil Consumer Expenditure Survey-POF 2017 shows that access to piped water and sewer connections differed significantly between rural and urban areas. It is estimated that 93 percent of the country's urban population have access to continuous piped water connections but only 32 percent of its rural counterparts do.

⁷ Despite these nominal rises in tariffs; revenue fell in real terms in many states. This was driven by a combination of high inflation and frequent increase in water tariffs to preserve revenue streams. However, the rises have not been uniform by states. In some states, tariffs fell. These were Amapá (-64 percent), Maranhão (-82 percent), Minas Gerais (-51 percent), Pará (90 percent), Paraíba (96 percent), Piauí (-83 percent), Paraná (-41 percent), Rondônia (-74 percent), Santa Catarina (-67 percent), Sergipe (-95 percent), São Paulo (-72 percent). States in Northeast and Distrito Federal experienced WSS tariff increases of more than 200 percent over the same period.

The remaining households obtain water from wells (protected or not), or from sources that are not treated for consumption, which may cause greater exposure to diseases. Temporary and emergency solutions, such as water brought by tank trucks, are also common in these areas, and there is no way to certify water quality. For sewage collection, 49.9 percent of households use leach pits, while 11.4 percent have no solution at all. The use of cesspits and direct disposal into rivers and the sea are also common in rural households. The urban-rural gap for sewer connection is found to be even wider – only 5 percent of the population living in rural areas are connected to the sewers while close to 71 percent of the urban population have access to sewer connection. Updated figures of the Continuous Survey of 2019 (PNAD-C) show similar rates of coverage for water and sanitation in rural, urban areas, and regions than the POF 2017 survey (MDR 2021).

Further inequality is found within urban areas, where residents of slums and illegal settlements typically have precarious public WSS services or none at all. According to data from IBGE, about 7.8 percent of Brazilian households are located in informal areas. Major difficulties in providing WSS services there include lack of land regularization, precarious housing, and payment difficulties for residents. In addition, informal settlements generally have high rates of disease and face high risks of floods, mudslides, and pollution. Because people have no access to sewage systems, they dispose of their wastewater in nature. Besides creating environmental harm, such as contamination of rivers and underground water, this increases the risk of diseases for the local population. This risk has financial implications as well, because one of its consequences is absence from work, lowering income.

The urban-rural gap in access to piped water and sewer connection are further reflected across consumption expenditure per capita deciles which could be a proxy for household wealth. Here, it is found that only 60 percent of individuals from the bottommost expenditure decile have access to piped water connection whereas as much as 93 percent of individuals from the topmost decile have access to piped water connection. In fact, the share of individuals with access to piped water steadily increases across each decile. The same is observed for sewer connection. Only 35 percent of individuals from the bottommost decile are connected to the sewers while as much as 85 percent of individuals from the topmost expenditure decile have access to sewer connection as their sanitation facility. Regarding the share of expenditure on water and wastewater, data shows that households in Brazil spend on average about 0.21 percent of their total monthly consumption expenditures on water and about 0.07 percent of their total monthly consumption expenditures on wastewater. These estimates roughly translate to R\$37.6 (US\$11.8) and R\$17.5 (US\$5.5), respectively, on average.

On average, the urban population in Brazil spends more on both water and wastewater compared to their rural counterparts. Across urban areas the share of water and wastewater expenditures are estimated to be 0.23 percent (R\$38.8 or US\$12.1) and 0.08 percent (R\$16.8 or US\$5.3) respectively of their total monthly consumption expenditures; while in rural areas, the values are estimated to be around 0.06 percent (R\$16.8 or US\$5.3) and 0.01 percent (R\$11.2 or US\$3.5), respectively. Although expenditure data could potentially be underreported in expenditure surveys, including POF, it is the best possible proxy of household welfare.

The amount of household water and wastewater expenditure increase across the expenditure deciles, but the poor allocate a larger share of their expenditures for water and wastewater than the richer population does. The population in the bottommost decile on average spend only R\$20.4 (US\$6.4) and R\$9.9 (US\$3.1) for water and wastewater expenditures, respectively; but the population in the topmost expenditure per capita decile spend roughly R\$50.6 (US\$15.8) and R\$21.8 (US\$6.8), respectively, for water and wastewater on average every month. However, through a closer examination the study observed that individuals in the lower deciles would allocate a higher share of their total expenditures on both water and wastewater expenditures compared to individuals in the higher expenditure deciles. In other words, the burden of water and wastewater expenditure is higher for poorer individuals than that for richer individuals.

Existing WSS Service Delivery Models in Brazil

WSS services are managed by more than 5,000 municipalities in Brazil, following the terms of Subsection V of Article 30 of the Federal Constitution. In principle, the ownership and responsibility for service provision lies with the municipalities, except for metropolitan regions, where such responsibilities are shared with the states⁸. Municipalities can provide WSS services directly, set up intermunicipal or consortium systems, or delegate the services to the state company or a private company. Direct provision of WSS services comes in various forms, with higher or lower levels of autonomy. Consortium systems can be intermunicipal or regional, taking advantage of the resulting economies of scale and greater capacity to provide WSS service delivery. Overall, WSS services in Brazil fall into three broad categories of service structure: local government/municipal ownership; state, private or regional government ownership.

Currently, state-owned enterprises (SOEs) are Brazil's main WSS delivery model, serving nearly 70 percent of population. Since the 1970s, when the National Water and Sanitation Plan (PLANASA) was launched, several state companies have been created to construct WSS systems at the regional or state level. Most municipalities delegate actual service provision to the state, and when they do, they are supposed to sign an agreement known as a program contract. Certainly, Brazil has examples of well performing SOEs, such as SABESP in the State of São Paulo, SANEPAR in the State of Paraná, and COPASA in the State of Minas Gerais. But overall, using program contracts as the main model has proven ineffective in achieving WSS universalization.

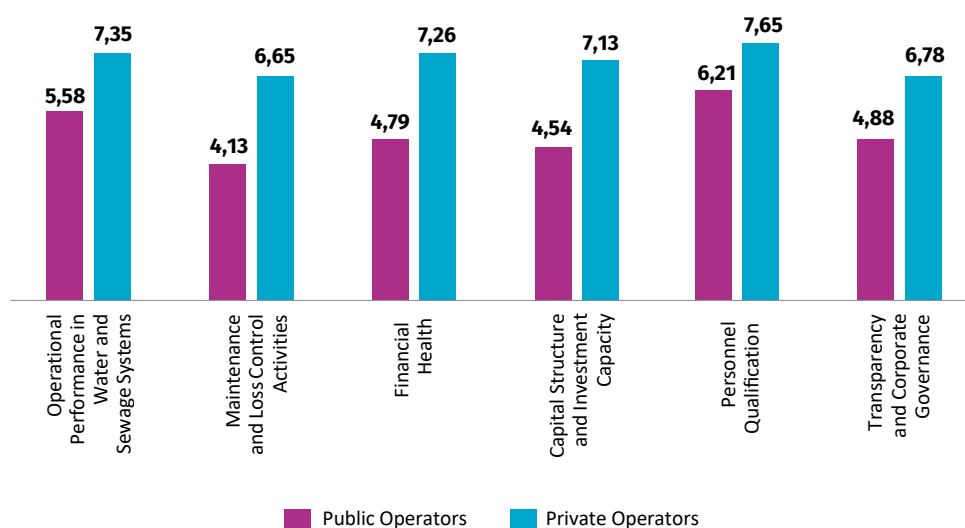
Private operators typically achieve better performance than public operators. Although, as noted, some public WSS companies stand out in performance, the country's private operators have generally outshone their public counterparts. While further research is needed to compare the performance of public versus private operators controlling for other variables (such as the relative wealth and socioeconomics of customers), in this study private operators show superior operational and financial results. This was partially due to clear contract targets that were needed to be met. Accountability mechanisms in the contracts lead private operators to rapidly identify and implement measures that enhance efficiency in operations and improve quality of WSS service. According to a study by Abcon⁹, municipalities that use private companies have, on average, service coverage approximately 10 percent higher than those that use public providers. Figure 4 compares the performance of public and private operators. Private sector participation in WSS has been low, although the numbers are growing after the passing of the new WSS law. The portion of population covered through private contracts at the time of the PIR study was only about 6 percent. This was mainly due to perceptions of substantial risk, uncertainties about investment returns, and the long maturation periods for WSS projects. Since the new law passed in June 2020, however, the private sector's share in municipal WSS service is estimated to have doubled, with the addition of private contracts in Rio Grande do Sul, Mato Grosso do Sul, Alagoas, Paraíba, and Rio de Janeiro, among others.

Though the number of private projects is small, they account for a substantial portion of total WSS investment, 20 percent in 2016. In the last 20 years, private concessionaires in Brazil have invested R\$15.2 billion (US\$2.9 billion) in WSS, with an additional R\$21.8 billion (US\$ 4.1 billion) committed to investments under current contracts but these investments have centered in wealthier states and cities. With the approval of the new law, private sector investment is likely to have increased as several new WSS systems are under design and preparation through public concession contracts and other contracts (administrative or sponsored concession contracts).

⁸ According to a decision of Supreme Court (which took more than 10 years), in the metropolitan areas the WSS responsibility is shared between municipalities and States, however in certain cases and with the enactment of a complementary law metropolitan areas deliver WSS services with multiple municipalities involved.

⁹ Panorama da Participação Privada no Saneamento. Associação Brasileira e Sindicato Nacional das Concessionárias.

FIGURE 4
Operational performance index (10=Best) of public and private WSS operators



Source: Stakeholder Survey conducted as part of the WSS-PIR diagnostics study, 2020.

Service delivery models in rural and informal settlements

In rural areas and informal settlements, WSS service delivery models are less clear. In rural areas, the main actors are local organizations or community providers. Usually, their capacity to improve and expand service is weak, so historically FUNASA¹⁰, a branch of the Ministry of Health, has lent a helping hand to rural systems. To expand water and sewage systems outside urban areas, FUNASA introduced the National Rural Program of Basic Sanitation (WSS) in December 2019. The program established short-, medium-, and long-term objectives for the 2019-2038 period, supported by specific frameworks, principles, objectives, guidelines, and strategies. These were drawn up under the former legal framework and will need to be updated to reflect the new legislation.

Rural Brazil has success stories concerning enhancing WSS service. Some states, such as Ceará and Piauí, created non-profits known as Integrated Systems of Rural Sanitation (SISAR) to overcome capacity issues of rural WSS providers (see Box 1 below). These have displayed good results and, on average, improved performance in the sector.

Brazil's informal settlements pose special challenges for WSS. An estimated 10 percent of the country's population live in informal settlements. In some states and regions with big cities, the figure can reach 20 percent. Houses in informal settlements usually have no WSS connections. Technical losses and illegal water connections are common and equally harmful to the revenue streams providers, making the total non-revenue water rates very high. These areas are often not included in the statistics because they do not formally exist. Brazil and other countries are making concerted efforts to reach the people at the end of this "last mile." Some good practice examples are summarized in Box 2 below.

¹⁰ Under the Ministry of Health, FUNASA is in charge of delivering water and sanitation in rural areas.

BOX 1**An example of an organization that is supporting WSS expansion in rural areas**

A SISAR (Integrated System of Rural Sanitation) is a non-profit organization bringing together community associations in a single watershed that are responsible for WSS systems. Through monthly contributions by providers, the organization finances its systems' infrastructure, maintenance, raw materials supply. It works to increase skills and capacity among the local population. Training aims to reduce technical, administrative, and community deficiencies. After 23 years of existence and multiple replications across the State of Ceará, SISAR has overseen the creation of eight management units and 1,041 WSS systems supplying more than 700,000 people.

**BOX 2****Good practice service delivery models for reaching the last mile**

The government of São Paulo state, working with the state-owned company SABESP, has implemented an initiative to upgrade houses that lack proper physical structure for provision of WSS services. The improvements in the Se Liga na Rede (Connect to the Network) program are free of charge and directed to people who cannot afford them. Across the state, 40 municipalities have joined in the initiative, targeting 192,000 households and 800,000 people with an investment of more than R\$349 million (US\$66 million).

Another good practice example is found in Chile, where drinking water service access is already almost universal with coverage levels of 99.93 percent. The coverage of sewage collection is 97.17 percent, of which 99.98 percent is treated. Though access is good, some people cannot afford the service. Chile's program is a direct subsidy system designed to give greater accessibility to the country's poorest and most vulnerable families. It uses state and municipal contributions of different percentages, depending on the socioeconomic level of each family, to help pay for the first cubic meters consumed. This benefit is deducted monthly from the customer's water bill. The beneficiary pays only the difference.

Opportunities and challenges with the servicedelivery models brought by the new law

The new legal framework contains three important initiatives concerning service delivery models. First, no more program contracts will be signed. Contracts already in force may continue until their final expiration, with options of revision, renewal, or extension on the condition that the companies prove their economic and financial capacity and adapt themselves to the objectives of the new universalization framework. Second, concession contracts will be favored, with public tender. "Ownership neutrality" is the guiding principle for these contracts, with private and public companies going up against each other in competition. Therefore, the current service delivery model (except for direct management) will no longer be allowed or will be reviewed. This is likely to lead to greater private sector participation, which will help amass investments required for achieving universal WSS access. Third, the new legal framework prioritizes the creation of regional/state systems, called blocs, and provides several incentives for channeling public funding to them. Municipalities need better capacity to comply with the changes in the new law. The law requires each municipality to craft a Municipal Basic Sanitation Plan (MBSP), a detailed roadmap for achieving universal water and sanitation coverage in its jurisdiction. Most are still struggling with this task, lacking the necessary technical and financial capacity.

The MBSPs are intended to help set municipal WSS service providers on a course to improving their operational and commercial performance. This will require water loss reduction, better energy efficiency and metering, and higher staff productivity. Capital expenditures must be carefully monitored to be more prudent, useful and utilized given the limited fiscal space and fragmented budgetary processes. Corporate governance of the different WSS provision models needs to be improved and polished to prevent misconduct and provide better transparency through the participation and engagement of stakeholders and through enhancing accountability.

Stakeholders will need to show resilience and adaptive capacity to meet new challenges that emerge. Regulatory agencies and other players need to evolve with this new reality, particularly in the pre-contractual and public procurement and contract management stages which are under the responsibility of the municipalities. Also, special attention will be required to launch sustainable and inclusive projects, that consider households' ability to afford, and to avoid cherry-picking projects.

WSS policies must ensure that rural areas and informal settlements get their fair share. This includes infrastructure expansion, technical assistance and planning, and asset replacement. National institutions that operate throughout the country, such as ministries and banks that fund WSS infrastructure projects, could play an important role in ensuring the rural and informal areas are not left behind. Social sustainability is fundamental and for this the projects and public policies require more equity and inclusiveness, as described in more detail in the following sections.

Private sector participation (PSP) in WSS could be delayed by resistance and reluctance of various WSS stakeholders in Brazil. The recently approved regulatory framework 14.026/2020 aims to facilitate the private role in the sector. However, some parties in Brazil see private WSS projects as a threat. These opponents variously argue that:

- Allowing more PSP in basic sanitation in Brazil will further increase social inequality;
- While Brazil promises that more private participation will increase access to WSS services, other countries have retreated from this approach and renationalized WSS. A UN report found at least 180 cases in 35 countries (including France, Germany, and Bolivia) over the last 15 years where WSS suppliers have returned to government; and
- Some studies have found that private operations choose to invest in areas where services are profitable and letting networks in areas inhabited by poor people go to ruin.



Creation of Regional Blocs

The new legal framework promotes regionalized service providers, known as blocs. Blocs are the vehicle of integrated provision of one or more components of WSS services in a territory that covers more than one municipality. Blocs can be structured in the following ways:

- Metropolitan region, urban agglomeration or microregion: Unit composed of neighboring municipality grouping;
- Regional unit of WSS services: Unit constituted by the grouping of municipalities, not necessarily neighboring, to adequately meet the requirements of hygiene and public health, or to give economic and technical feasibility to the less favored municipalities;
- Reference bloc: A grouping of municipalities, not necessarily neighboring, and formally created through voluntary associated management of the owners.

The new law requires that projects that enable regional services get priority in allocation of federal WSS investment funds. Federal Government resources can be obtained if an enterprise's economic-financial sustainability is not possible with tariff revenues alone (even after grouping with other municipalities in the state). The funds can also go to investments that serve municipalities with larger WSS deficits and whose population lack payment capacity to assure economic-financial feasibility of the services.

One of the main objectives of regionalization of WSS services is to make these blocs more attractive for private sector investments. Municipalities with different levels of investment allure will be in a single bidding process, making possible better terms for those that would encounter greater difficulties in obtaining good contracts alone.

This strategy of regionalizing service delivery is expected to give operators a gain of scale, high technical capacity, optimization of services and increased economic and financial feasibility of service provision (through cross-subsidy, for example). Current indirect and cross-subsidy policies in Brazil incentivize access, but the needed practices for expanding pro-poor access require direct demand-side subsidies and improving targeting to maximize social welfare.

A standard methodology for the regionalization of service provision has not been established, including its governance model. Creation of blocs is under the responsibility of state governments, with June 2021 as a legal deadline for bloc formulation and proposal, after which the Federal Government will step in to guide on the conformation and operation of regional blocs. The regional bloc model could differ greatly among the states depending on their sector characteristics. Box 3 below illustrates one example of an approach taken by a state.

BOX 3.**Examples of regional provision in São Paulo state¹¹**

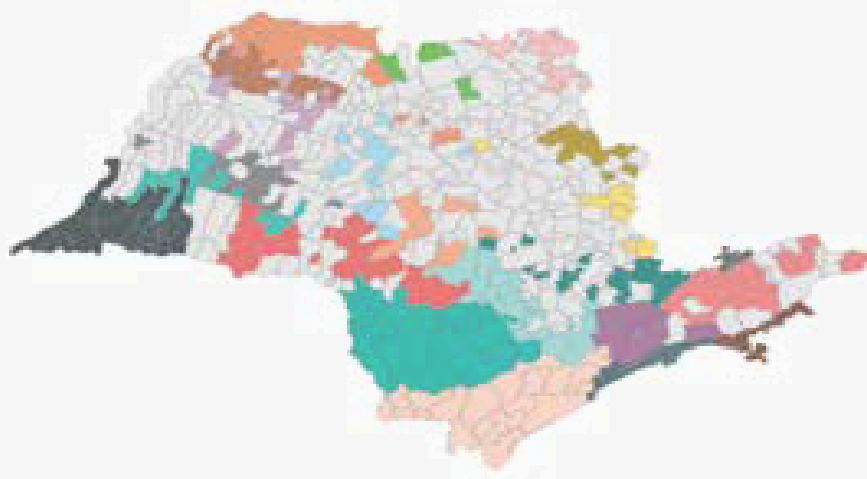
The regional blocs of WSS service in the São Paulo State are constituted based on different criteria and service characteristics. Adherence by municipalities in the regional models is allowed by holders when services are of local interest (municipalities have 180 days to adhere after the Ordinary State Law).

Compulsory membership for municipalities that are members of Metropolitan Regions, Microregions and Urban Clusters, which effectively share operational facilities. The criteria used to consolidate the different regions (see map below) are coverage, water losses, CAPEX requirements for service expansion, wastewater treatment capacity, and origin of water source. For the proposition of the regional basic sanitation units, the municipalities were grouped into large groups by geographic proximity, respecting the hydrographic basins as a basic sanitation planning unit, aiming at the viability of the provision of services and the economic and financial sustainability of the proposed groupings of municipalities.

Within this context, the first regional unit was defined by the set of municipalities currently operated by the Basic Sanitation Company of the State of São Paulo - SABESP, which, through its Business Units, already meets the requirements of the Law. For the other municipalities, groups with indicators of economic and financial viability were sought to provide services in the set of municipalities through the economy provided by economies of scale. Based on these conditions, the regional units were distributed in clusters: southeast; center; east; and north. Noteworthy, that in the case of São Paulo the regionalization model was designed taking into account the interests of SABESP and the existing systems such as the one of hydrographic basin of Piracicaba (Campinas region).

The state created by law the regional units of WSS (URAE). URAEs will develop their regional plans observing the national targets for the WSS universalization. They must comply with reference standards of ANA and can create their own regulatory agencies or join with the state regulatory agency (ARSESP). The objectives of the São Paulo government with this law are to ensure the economic and financial viability of the WSS universalization through the gain of economies of scale, the optimization of systems and the sharing of infrastructures.

Regionalization of service in Sao Paulo according to the new WSS Law (each color depicts a regional model)



Source: Based on *Estudo para organização dos municípios do Estado de São Paulo em unidades regionais de saneamento básico*. (2021). Governo do São Paulo. *Definições legais* (Lei Federal n.º 14.026/2020):

¹¹ The Government of São Paulo has developed a bill (Law no. 251/2021) for the creation of four regional units of WSS (URAE) covering the entire State of São Paulo that is in the public hearing phase. One of the regions has an area served close to that of SABESP. In this model of regionalization, municipalities do not have to be contiguous. The four regions define their governance model according to the metropolis statute (Federal Law No. 13.089 of 2015) through: a) an executive body composed of representatives of the Executive Branch of the federative entities that are members of the respective URAE; b) a deliberative collegiate body with representation from civil society; c) a public organization with technical-advisory functions; d) an integrated system of resource allocation and accountability.

Engagement of community and users

Citizens welcome having WSS service in their homes but are generally not aware of its larger benefits to society. There is a close relationship between WSS, public health, and the environment. WSS, in fact, can be called the basis of a country's entire health system. Lack of it has serious implications on people's quality of life, increasing the incidence of infections. This has become more evident due to the COVID-19 pandemic, for which the primary measure of prevention is the constant washing of hands. Still, communities have low engagement on WSS issues, mainly because citizens do not grasp the larger benefits of WSS services. Enhanced community participation is vital. Because water service delivery is fragmented across thousands of municipalities, there is no strong national campaign on the topic. While WSS is the responsibility of the municipalities, discussions with the communities are typically restricted to the level of tariffs for individual consumption. Lack of transparency, information, and communication by the governments and the WSS service providers themselves have contributed to this lack of public engagement and low efficiency of WSS services in Brazil.

Resilience Building in Brazil's WSS sector

Brazil's WSS sector needs to build resilience towards future shocks and crisis that could include natural disasters and climate related events. It affects water cycles directly through droughts and increasing temperatures, which reduce water flows, groundwater recharge, and carrying capacity. These in turn cut water availability, leading to higher concentration of chemicals and other pollutants. Or they cause floods, which damage water quality and make water treatment less effective through increased concentration of suspended solids. In Brazil, some regions are particularly vulnerable to droughts and need to take specific measures to avoid financial stress and deterioration of service. In other regions, the prime risk is floods. According to the National Water and Basic Sanitation Agency (ANA), almost 50 percent of Brazilian municipalities faced floods and droughts at least once between 2003 and 2016. This has led to severe cutbacks of service and damage to infrastructure. These realities underline the need for expansion of the systems and/or development of new water sources.

The resilience of Brazil's WSS service providers was tested when the COVID-19 pandemic hit the country. Early into the crisis, it became clear that hand washing and good hygiene practices were key to preventing virus transmission. As a result, WSS service providers were pressed to ensure the continuity of their services. They adopted multiple measures, including limits on in-person services, promotion of remote payment of bills, but also the freezing of tariffs, the pausing of service suspension and legal action against non-payment, and general payment exemptions for vulnerable users. These unforeseen steps put major pressure on WSS service providers, which struggled to meet service needs as they witnessed reductions in consumption and payment. A recent assessment of COVID's financial impact on Brazil's WSS service providers have revealed that the studied WSS service providers experienced reduction in collections by 6.3 percent on average compared to non-COVID projections, and 29.6 percent decline in cash flows, compared to the non-COVID scenarios¹².

The government has put support mechanisms in place to mitigate COVID's short-term economic effects. These include temporary cash transfers to informal and unemployed workers; advance payments of salary bonuses to low-income workers; lower taxes and import levies on essential medical supplies; and new transfers from the federal to state governments to support higher health spending and as a cushion against projected falls in revenues. However, federal authorities took very few steps to help consumers pay for water or sanitation services or to provide direct financial support to utilities.

¹² See World Bank 2021 and World Health Organization 2020. Some federal measures did help operators overcome liquidity problems, however. For instance, the Federal Government established a priority for funding the sector via FGTS (Fundo de Garantia do Tempo de Serviço, the Social Security Fund) and suspended debt payment installments for public and private companies.

Measures to shore up WSS SOEs during the pandemic were limited to a handful of states and without clear federal guidelines for relieving financial imbalances through contingent federal and state budgets. Most Northern states did not fully implement these measures. There were no amendments to the Annual Budget Law to provide flexible sources of financing to address the increasing financial imbalances of the SOEs. In addition, there was no provision in the Annual Budget Law to grant public financial resources as subsidies¹³.

In practice, lack of financial support for WSS SOEs' balance sheets has resulted in a higher burden to taxpayers during the pandemic. Taxes are financing WSS tariff subsidies¹⁴ but many households are not benefiting from the subsidies because they don't use the WSS services. The effect has been to preserve and, in some cases, increase the financial deficits of the WSS sector.

The COVID-19 experience has demonstrated the importance of building financial resilience for the long-term. Despite some Government support, the pandemic brought financial deficits that forced utilities to postpone maintenance and capital investments to free up resources for day-to-day operating expenses. Over time, these emergency deferrals can lead to deterioration in assets and delays in planned expansions of coverage. The poor would feel the greatest impact of these delays because they tend to be the people waiting for the promised services. This would further deepen inequalities of service, as financially constrained service providers take even longer to achieve Brazil's goals of universal coverage.

COVID-19 is pushing a variety of WSS financial indicators in the wrong direction--contingent expenditures, tax revenues, and capital investments. The Northern and Northeastern states, for instance, lost close to R\$113.7 billion in revenues in 2020 (13.5 percent of total 2019 revenues) due to COVID-19 lockdowns (US\$21.9 billion). This has resulted in annual fiscal deficits of above 5 percent of GDP¹⁵. In the time of a pandemic, strong governance and financially sustainable state-owned WSS facilities could help combat economic contraction, by spending public resources efficiently, and promoting equity and development goals. In its current state, Brazil's WSS system cannot deliver this support.

Reducing the Federal Government's contingent liabilities should be accomplished through the appropriate sharing of fiscal risks among federal, state, and municipal governments¹⁶. This requires the creation of a framework that increases fiscal transparency and consolidation between the Ministry of Regional Development (MDR), the National Water Agency (ANA) and the Ministry of Health (MinSaude). It will also need acceleration of fiscal reforms in subnational governments to limit their structural expenditure growth. Given the importance of consumption taxes for state and municipal governments¹⁷, the less decentralized states (with higher dependence on consumption in their GDP) have been the hardest hit by COVID-19's economic impacts, including many poorer states in the North and Northeast.

¹³ The purpose of the law was to obtain the benefits of Article 65 of the Fiscal Responsibility Law, namely, the exemption from achieving the tax results provided for in the LDO and the suspension of the commitment limitation mechanism.

¹⁴ For a detailed analysis and discussion on water and sanitation tariff subsidies and its distribution see Narzetti and Cunha 2021.

¹⁵ This caused an increase in default rates registered by utilities in the sector, which registered an average of 23.91 percent at the beginning of April of 2020, according to data presented by the Brazilian Association of State Companies of Saneamento (AESBE). These figures still show a variation between 12.93 percent and 31.7 percent in non-payment of services, depending on the country's region. For the second quarter of 2020, a drop of 48 percent in revenue was expected. Brazil also showed high debt and limited fiscal space to further support WSS utilities during the COVID-19, with a large share of fiscal support during 2020 as a percentage of GDP.

¹⁶ See (World Bank, 2020). COVID-19 in Brazil Impacts and Policy Responses. Washington D.C. <http://documents1.worldbank.org/curated/en/152381594359001244/pdf/Main-Report.pdf>

¹⁷ See Dos Santos, A.P., and K.P. De Castro. 2018. Local Governments' Tax Burden in Brazil: Evolution and Characteristics. Taxes and Taxation Trends. Edited by Jolanta Iwin Garzyska. DOI: 10.5772/intechopen.74808



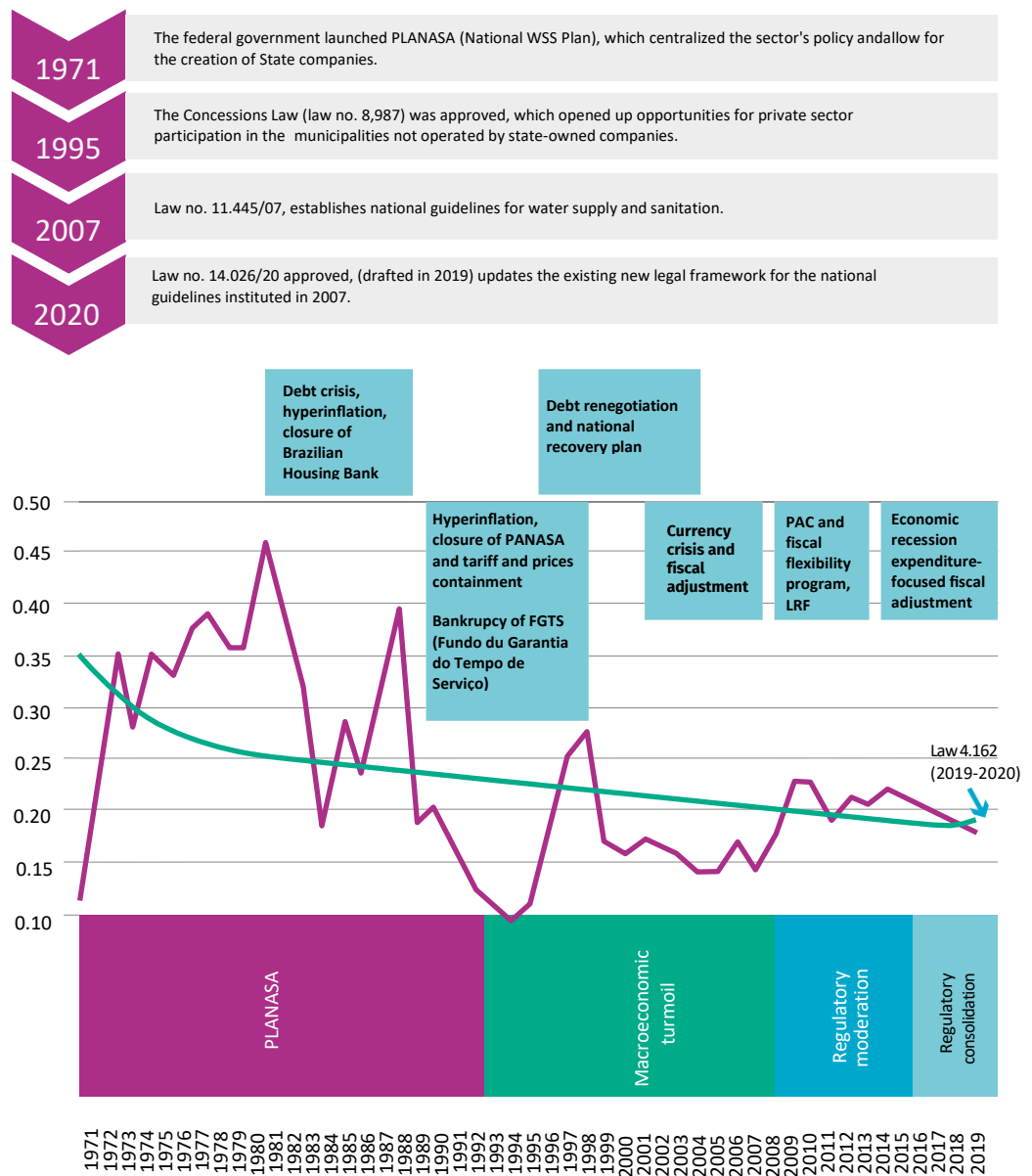
Section
3

Legal, Policy, and Regulatory Framework

Evolution of the legal and regulatory framework in Brazil

Brazil's WSS sector has undergone multiple reforms during the past fifty years. In 1971 the Federal Government launched the national WSS plan, which centralized the sector's policy and allowed the creation of state WSS companies. In 1995 a concession law was approved, and in 2007 the first national guidelines for WSS were established. The most recent changes, which came with the passing of the new WSS law in 2020, are the main focus of this report. Figure 5 summarizes WSS sector reforms that Brazil has undertaken over the last 50 years.

FIGURE 5
WSS sector reforms and WSS investments (as % of GDP) in Brazil in the last 50 years



Source: PIR and PER studies, 2021.

FIGURE 6
Regulatory agencies in Brazil



Source: Narzetti and Marques, 2021.

Brazil's decentralized regulatory framework

Brazil's regulatory model for WSS is decentralized and encompasses enterprises owned by states, consortiums of municipalities, and municipal agencies. Federal Law no. 11.445, enacted on January 5, 2007, established that municipalities were responsible both for regulation and WSS provision in their jurisdictions. However, the regulatory functions can be delegated to a regulatory authority within the state's limits. Since 2007, multiple diversified WSS regulatory agencies have been created in Brazil. At the end of 2020, WSS in more than 3,000 municipalities was being regulated by 73 WSS regulatory agencies. Figure 6 displays the structure of WSS regulation in Brazil, comprising one national agency, 25 state agencies, 13 intermunicipal agencies, and 34 municipal agencies¹⁸. Most of them are multi-sector regulators that also oversee such fields as transportation and energy. In some situations, a single WSS provider is regulated by more than one agency, which raises issues of coordination, predictability, and regulatory certainty, and increases overall regulatory risk of the WSS sector.

WSS regulators have generally been inefficient because of their low technical capacity and lack of resources and political influence—and many service providers operate with no regulation at all. Many of Brazil's profusion of regulatory agencies work without performance parameters. While there are some effective agencies, such as ADASA, ARSESP, ARCE, ARIS and ARES-PCJ¹⁹ that are performing their regulatory functions and responsibilities while others are not as effective due to different reasons, including lack of human and financial resources. Most regulatory agencies are not fully complying with their statutes and law, for example by not setting tariffs or supervising the quality of WSS services.

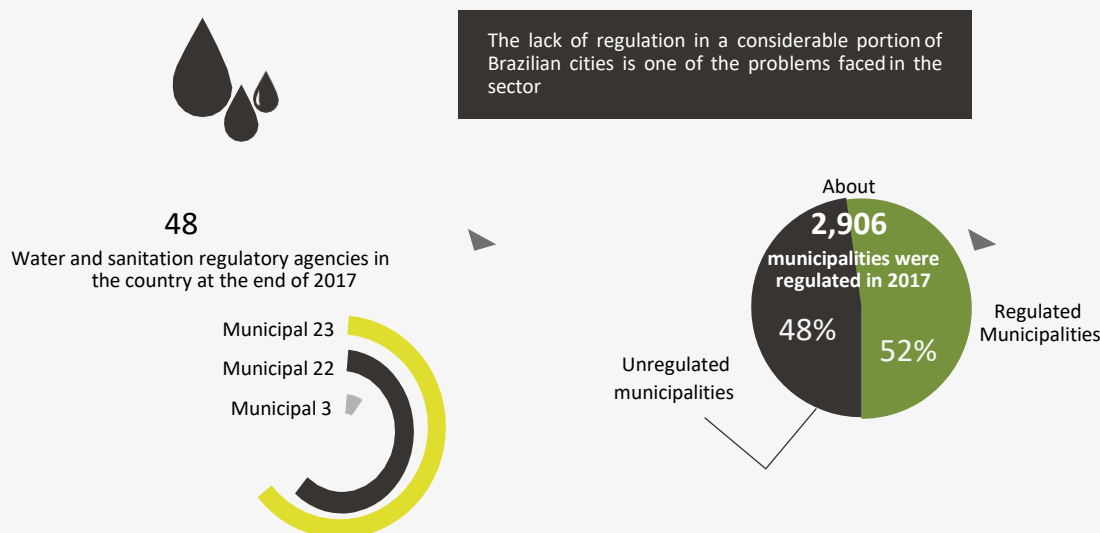
¹⁸ The complexity of institutional arrangements of regulatory agencies of the WSS sector is explained in PIR (World Bank 2021) and Narzetti and Marques. 2021. "Isomorphic mimicry and the effectiveness of water-sector reforms in Brazil." Utilities Policy. Volume 70, June.

¹⁹ ADASA – Agência Reguladora de águas, Energia e Saneamento do Distrito Federal (Regulatory Agency for Water, Energy and Sanitation of Distrito Federal). ARSESP - Agência Reguladora de Serviços Públicos do Estado de São Paulo (Regulatory Agency for Public Services of São Paulo State). ARCE – Agência Reguladora do Estado do Ceará (Regulatory Agency of Ceará State). ARIS – Agência Reguladora Intermunicipal de Saneamento (Intermunicipal Regulatory Agency for Sanitation of Santa Catarina). ARES-PCJ – Agência Reguladora dos Serviços de Saneamento das Bacias dos Rios Piracicaba, Capivari e Jundiá (Regulatory Agency for Sanitation Services of the Basins of the Piracicaba, Capivari and Jundiá Rivers).

Regulatory governance has been in general poor, hampering decision-making capacity and quality and consequently agencies' performance. For the most part they regulate urban areas and give little attention to the rural and peri-urban areas where most members of the vulnerable population live. Figure 7 below shows that in 2017, WSS services in almost half of the municipalities were not regulated at all.

Ineffective regulatory agencies typically confuse their role with supervision of construction, rather than overseeing the full spectrum of WSS, such as pricing, services, and reliability. In addition, state and municipal regulations are often not aligned with federal requirements. As the system works in practice, each municipality creates a regulatory agency that administers contracts in different ways, with different expectations of services, investments, and tariffs. Investors have no way to know what type of regulation a particular city might have. This increases the overall risk of the sector and makes private investors reluctant.

FIGURE 7
Regulatory coverage of municipalities in Brazil



Source: WSS-PIR, 2021.

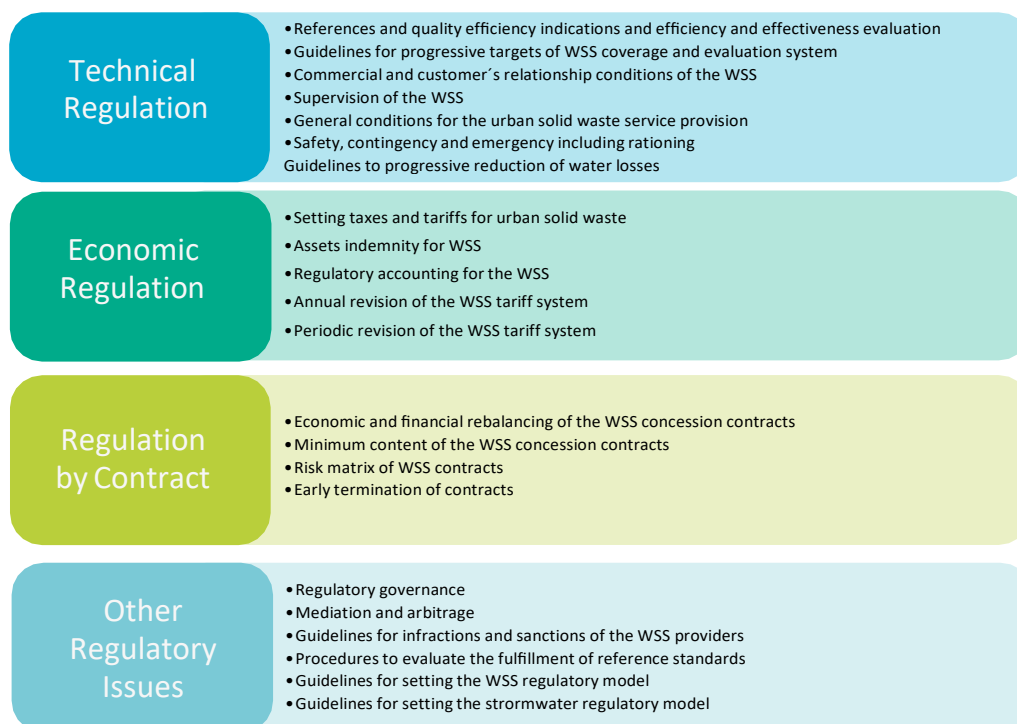
ANA's new role in Brazil's regulatory framework

The National Water Agency (ANA) is now tasked with establishing national reference regulatory standards for the WSS sector. Recognizing that the regulatory model has been a bottleneck, the new legal framework gave ANA authority to establish national reference regulatory standards for the WSS sector, in particular on the quality of service, operational efficiency, commercial and economic issues, and standard contents of contracts. ANA defined its strategy for the period 2021-2022 in its so-called regulatory agenda, which comprises 22 reference standards. Figure 8 shows the 22 standards.

ANA aims to establish higher legal certainty in the WSS sector to attract more investments, particularly from the private sector. The empowerment of ANA is expected to strengthen the quality of regulation through the standardization of regulatory functions, methods, and governance. Such legal certainty would help increase the number of financially viable projects with lower risk. While the adoption of reference standards by subnational regulatory agencies is officially non-compulsory, they have an incentive to do so: WSS providers under the jurisdiction of non-compliant regulators would have no access to federal funding. In the new legal framework, ANA has other important regulatory functions as well, such as coordination of capacity building of WSS regulation in the country, development of best practices manuals and guidelines, and mediation of conflicts and disputes.

FIGURE 8

Reference standards of ANA for the 2021-2022 period

*Source: WSS-PIR, 2021.*

The Brazilian regulatory model was already a hybrid model with the co-existence of regulation by agency and regulation by contract. In the first system, a dedicated regulatory agency oversees a company's operations. In the second, there is no regulatory agency, and the government agency that issued the contract works to hold the contractor to the document's terms. But these contracts are precarious, signed between public entities with multiple limitations, in the form of program contracts. Often, work proceeds even with no contract signed. The quality of contracts that do exist is generally poor, and there is no coordination of their content. Regulation by contract does not in any way replace regulation by agency, but it can be a tool to complement it. Ideally, a contract has the ability to mitigate most regulatory risks, while a regulatory agency tends to eliminate the imperfections of contracts, bridging the gaps. If there is no coordination between the two regulatory models, and if regulation by agency works separately from regulation by contract, conflicts between regulatory obligations versus contractual obligations can arise, creating legal uncertainty. This situation has had little real impact so far because most WSS providers are publicly owned and the number of concession contracts has been small. However, the expected growth of private sector participation, along with the need for legal certainty to promote investments, will speed up the number of signed concession contracts. Therefore, the alignment of regulation by contract with regulation by agency will be crucial, as well as the quality of contracts.

A well-functioning ANA will be crucial to successfully implement the new law and to achieve its main objective of universal WSS access²⁰. ANA's challenges are enormous, starting with its learning curve as the overlord agency which must "regulate the regulators," including developing their capacities and skills. ANA is also tasked with establishing a high number of reference standards and evaluating their adoption by the subnational regulators. The strengthening of regulation by contract and coordinating it with regulation by agency poses an additional challenge. In the end, regulation must be more comprehensive and inclusive and encompass the rural and informal areas, the places where it is most needed. The quality of the law's implementation will determine whether it brings the expected benefits in the long term.

²⁰ For different opinions about the law, see, for example, <https://www.cnnbrasil.com.br/business/2020/06/24/so-privatizar-nao-resolve-saneamento-avalia-economista-do-banco-mundial>

As noted in the previous section, the new legal framework seeks greater efficiency in planning, operations, and budget execution through creation of regional “blocs” of WSS services. However, planning regionalization remains poor, which may give rise to legal barriers because the new framework does not solve issues of bloc ownership. In other words, there should first be a solid understanding of what local interests and common interests are, providing more conditions for the Federal Government to help subnational entities. There is great expectation regarding the rules that will be defined for this regionalization because municipalities often have conflicting political interests and alignments.

A regulator could play an important role when disputes arise in implementation of regional bloc models. For example, when a municipality with higher per capita income and higher water and sanitation coverage rates joins with one with less income and lower rates, it will in effect subsidize investments in WSS services in its partner’s cities. If a city has legal ownership of local water and sanitation facilities, bloc decisions that displease its mayor can be questioned from the legal point of view. ANA could play an important role in resolving such disputes. One of the biggest challenges will occur up front—to reach a governance agreement that clearly defines the bloc’s organization and aligns interests to head off future economic and legal disputes.

Inter-ministerial coordination

The new water and sanitation law creates the Interministerial Committee on Sanitation (Cisab). The Minister of Regional Development will chair the Committee, which will be composed of the ministers of health, economy, environment and tourism. The Committee’s mission will be to improve cooperation between federal agencies that act in the sector, supervise and guarantee the execution of the new framework, and define the allocation of the sector’s financial resources.

Policy and Executive Functions

The integration of planning in the definition of objectives, goals, and guidelines for WSS services are brought through the National Plan of Saneamento, the PLANSAB. Under the responsibility of the Federal Government, the plan became a guide for WS polities, programs, and actions in Brazil, working on the sector’s budget planning and financial execution, while also strengthening the cooperation between the Federation, States, and Municipalities through the federative integration of the sector policies.

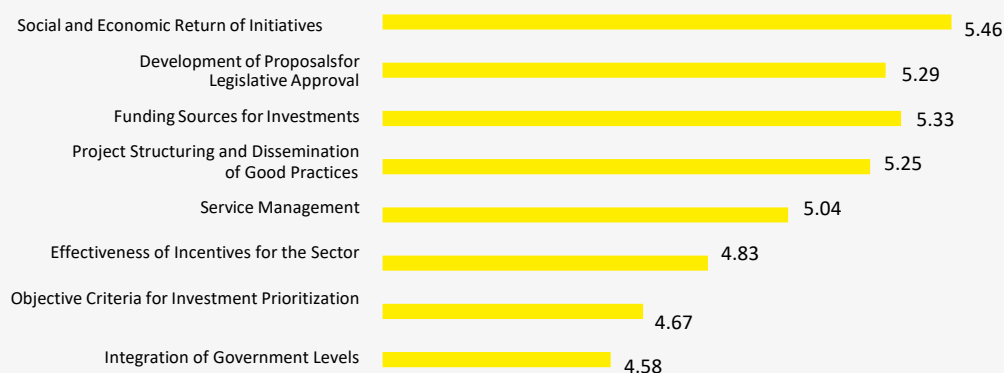
The role of the Federal Government would be to create incentives for states and municipalities to provide better service to their residents. To establish a conducive policy framework the Federal Government needs to work closely with the states and municipalities. This should be done with the goal of fully understanding local conditions in cities and their urban dynamics. In this sense, the government should assume a sort of protagonist role in fostering universalization, providing clarity, efficient access to resources, and technical support to establish partnerships with the private sector.

The Federal Government would do well to work toward greater reliability of data in the SNIS. This would enable senior policy makers and community members alike to make better decisions about upcoming projects and services.

Sector stakeholders often contend that state governments should foster greater alignment between municipalities through better-coordinated instructions and practices. Regarding state and municipal laws, sector stakeholders observe that they have little impact on service provision.

Sector stakeholders see political interference in policy and executive functions as something negative. Pledges to expand water service have a populist appeal but disregard the fact that the additional costs generated by such measures will be passed on to the final user. In these situations, the actors of Federal, State, and Municipal governments and WSS regulators and operators lack a convergence and alignment of interests, regardless of their political position. Ideological discussions distract the sector from discussing how to do things in the most economical way. Stakeholders generally believe that decentralization of the sector is not bad, since Brazil is a country of continental proportions and has regions with different characteristics. In the survey, sector stakeholders generally gave executive functions low scores, with Integration of Government Levels being the worst of them (Figure 9).

FIGURE 9
Scores for executive functions



Source. WSS-PIR, 2021

Implications for the Implementation of the New WSS law





The new legal framework will help federal, state, and local governments identify gaps in corporate governance and harmonize guidelines of subnational regulatory agencies and WSS SOEs. Each of the changes and mechanisms described in Table 1 below will require specific guidelines and strategies to effectively implement the new provisions of the WSS legal framework.

With the new legal framework, the objective of universalization will be advanced by integrated management and targets for service delivery improvements. Health and environmental co-benefits are to be considered when crafting budget allocations and investments in the sector. A formal institutional coordination plan and rules between federal and state governments will streamline financial support and technical assistance to the municipalities and implement Cisab mandates to improve financial allocations to the local governments.

Going forward, it will be important to separate politics from regulation. In a country that has many regulatory agencies, some are small and largely toothless, lacking the political and institutional strength to influence the sector. They may be subject to arbitrary decisions by government officials which are often not sustainable and economically viable. During the COVID-19 pandemic, this arbitrariness has increased, without the necessary consultations with the agencies. One suggestion is that there should be a culling of these agencies, with the extinction of some and the improvement of others. The ideal outcome would be the establishment of a collection of well-structured regulatory agencies with technical know-how and clear legal authority, each of them serving a particular region. Technical decisions of tariff reviews would be separated from politics. The regulatory agencies must have more independence and a more leading role in the reform process. Improving regulatory governance is key to avoiding populism and political opportunism concerning the sector's priorities. Better governance could also address moral hazard and disputes between regulatory agencies and municipalities with regards to tariff adjustments.

TABLE 1

Summary of changes under the current legal and regulatory framework of WSS

Main Changes	Key mechanisms
Regulatory governance	 <ul style="list-style-type: none"> • Creation of federal reference standards (methodologies and governance) by ANA to subnational regulators • Design of incentives for adoption (condition for federal funding, freedom to select regulator, results publicity)
Ambitious performance targets and enforcement	 <ul style="list-style-type: none"> • Definition of ambitious targets for universalization (coverage at 99% for water and 90% for sewage by 2033) • State SOEs required to prove financial capacity to achieve new targets in order to remain operators • Incorporation of targets for losses, quality, and efficiency • Restrictions to dividend payouts for underperformers
Push for Regional approach	 <ul style="list-style-type: none"> • States entitled for concessions of cities located in metropolitan regions or that share infrastructure • States required to structure city blocs aiming at scale and cross-subsidies for cities willing to use concessions • Federal funds conditioned to cities that opt to join blocs
Market-friendly rules	 <ul style="list-style-type: none"> • States SOEs privatization facilitated, since change in control does not require the approval of cities where they operate • Public tenders mandatory to choose operators as current contracts end • Enhancement of subconcessions provisions

Source: World Bank-IFC, 2020. Brazil Water and Sanitation Workshop.

Section
4

WSS Sector Financing

Funding requirement for achieving universal access to WSS

The cost of achieving universalization of WSS services in Brazil has been variously estimated as requiring \$3 billion to \$15 billion in annual investments²¹. In 2014, the original National Plan of Water and Sanitation (Plano Nacional de Saneamento Básico, PLANSAB), estimated that the country would need investments of about R\$26 billion (US\$5 billion) per year (about 0.4 percent of Brazil's GDP) to achieve universal WSS services. However, subsequent estimates by IFC-World Bank (2019), using the revised 2019 estimates of PLANSAB, pointed to a much larger investment requirement of a total of \$700 to \$750 billion (US\$178 billion to 190 billion) between 2020 and 2033 (World Bank 2019). This corresponded to US\$13.7-14.6 billion in annual investments, between 3 to 4 times as much as PLANSAB's original estimates. A low-end estimate based on the World Bank (2018) shows that meeting existing demand without taking into account population growth in Brazil would require R\$317 billion (US\$60 billion) during the next 20 years or R\$16 billion (US\$3 billion) per year²². These figures add up to around US\$ 15 billion higher-end investment requirements for the sector.

The investment requirements are large, but they would bring economic and social benefits to the country in the order of R\$537 billion (US\$102 billion). Most importantly, universalization would unlock strong future gains in health, productivity, and environmental enhancement. As shown in Table 2, PLANSAB 2019 has estimated investments per region required to meet the goals for universal drinking water supply and sewerage by 2033.

But the reality is that Brazil has been investing less than half of what is required for universalization by 2033. Many of the construction materials for WSS infrastructure are imported, so the large depreciation of the Brazilian Real over the last decade has made these purchases all the more costly. At current investment rates and improvements in coverage, the country would reach universalization only after 2050, a delay of about two decades beyond the 2033 target.

Contributions from the Federal Government for capital improvements have fallen. The WSS budget allocation in Brazil accounts for a smaller share of GDP than comparable sectors such as basic education and primary health care. In fact, the share of WSS budget has been decreasing over time while other sectors have proportionately increased (basic education) or remained reasonably stable. This reflects macroeconomic and fiscal restrictions facing Brazil as a whole. These have further worsened with the recent COVID pandemic. State spending on WSS is also down.

²¹ Estimates of annual investment costs vary so widely, between US\$3 billion and US\$15 billion, because of different assumptions on costs and types of infrastructure to be built, and whether the estimate should only include costs of achieving expansion of coverage, not maintenance and improvement of the current networks. PLANSAB calculated various scenarios based on those considerations. The minimum is US\$3 billion per year only to expand coverage with steady demand. The issue is that population growth, asset replacement, and other investments in resilience will tend to push investment requirements toward the higher end of the range, US\$15 billion. Spending at that volume would make coverage sustainable, accommodate demand increases, and keep existing networks in good working order. Investments in Brazil for WSS need to multiply by several factors in order to achieve universalization of coverage by 2033 in urban areas and 2038 in rural areas, as determined by Brazilian law. There are regional initiatives like INFALATAM (<http://infralatam.info/en/methodology/>) that estimate these investment needs. However, the INFALATAM investment figures for Brazil's WSS sector are lower than the ones presented in this study. The reason is that INFALATAM uses gross fixed capital formation expenditures and does not include asset replacement, current expenditures (including payroll/severance payments), and operation and maintenance costs. The investment needs figures presented in this study were consulted and corroborated with national assessments from Instituto Trata de Brasil and Fundação Getúlio Vargas.

²² See for instance World Bank. 2018. Volume V – Tema 4: Sustentabilidade Financeira Diálogos para o Aperfeiçoamento da Política e do Sistema de Recursos Hídricos no Brasil. World Bank-Brasília, DF/Brasil.

TABLE 2

Investment requirements per region

Region	Population (2016)	Share	Investment requirements (BRL)	Investment requirements (US\$)	Share
Southeast	86.3 million	42%	BRL 140.0 billion	US\$ 28 billion	39%
Northeast	56.9 million	28%	BRL 84.3 billion	US\$ 17 billion	24%
South	29.4 million	14%	BRL 59.1 billion	US\$ 12 billion	17%
North	17.7 million	9%	BRL 37.0 billion	US\$ 7.4 billion	10%
Midwest	15.6 million	8%	BRL 36.6 billion	US\$ 7.32 billion	10%
Total	205.9 million	100%	BRL 357 billion	US\$ 72 billion	100%

Source: PIR, 2020 based on PLANSAB data.

The 2033 target will be met only if Brazil accelerates coverage growth with a robust investment framework that promotes innovation. The country will also need a simplified budget framework that explicitly boosts investment in subsectors that bring the most cost-effective solutions and maximize coverage. Investment must bolster subsectors that bring the highest co-benefits in health, environmental preservation, and human capital development.

The large and increasing investment gap calls out for greater participation from all sources of funds, especially private, long-term, and well diversified financing. Currently, the main resources come from public financial institutions such as Caixa (CEF) and the National Bank for Economic and Social Development (BNDES). Participation by private banks and multilateral institutions remains insignificant, mainly due to the high perception of risk and the long maturation period required for projects in the sector.

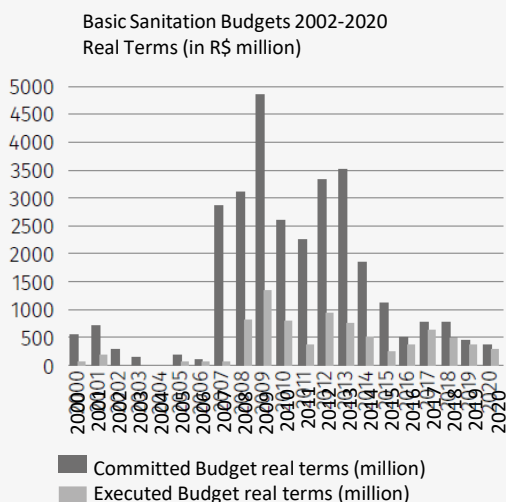
Low investments and budget execution rates in the WSS sector

WSS has traditionally received very low priority in government spending in Brazil, as reflected in budget allocations that in 2020 gave it a mere one tenth of one percent (0.1 percent) of the total national budget. Figures in the latest Pluriannual and Annual Plans and Budgets make clear that priority goes to other sectors such as health, education, social security, and urbanism. Together, they capture more than 70 percent of the predicted total, on average. WSS lies at the bottom of sector budget priority, garnering 0.02 percent in 2019 and 0.01 percent in 2020. The same downward trend for WSS allocation has occurred at the state and municipal levels, with a remarkable exception in the State of Ceará, where WSS allocations amounted to 2 percent of the total annual budget in 2019 and 1 percent in 2020.

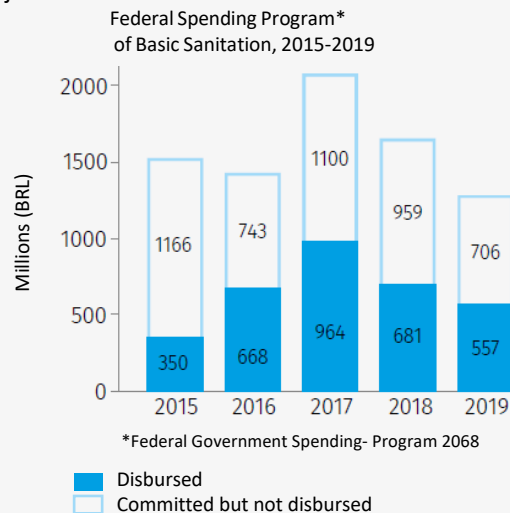
Problems of low allocations are compounded by consistently weak budget execution rates at the federal, state and municipal levels. WSS expansion suffers badly because Brazil does not actually spend much of the money that it assigns to the sector. For example, timely, appropriate spending of WSS budget channeled through the social assistance, health and environment government functions can occur at negative 70 percent rates and sometimes even negative 100 percent of the allocated amounts. In basic sanitation, well under half of funds committed to basic sanitation were actually disbursed between 2015 and 2019, further constraining progress in the sector (Figure 10).

FIGURE 10

Budget Under-Execution in Brazil, Real Values Adjusted with IPCA



Source. SNIS 2000-2020



Note: real values adjusted with IPCA
Source. SIOP 2015-2019

High budget under-execution in the past decade stems mainly from system inefficiency and lack of capacity. Capacity limitations occur at different administrative levels but mainly at the municipal. Factors that contribute to low execution rates include (1) poor operational and management capacity of service providers, (2) low transparency in the allocation of resources, and (3) lack of aid from the federal and states for less-developed service providers.

At the federal level, Brazil’s budget process is very volatile for all categories of spending due to macro instabilities. Fiscal vulnerabilities shook Brazil in several periods between 2000 and 2020, complicating the federal budget process.

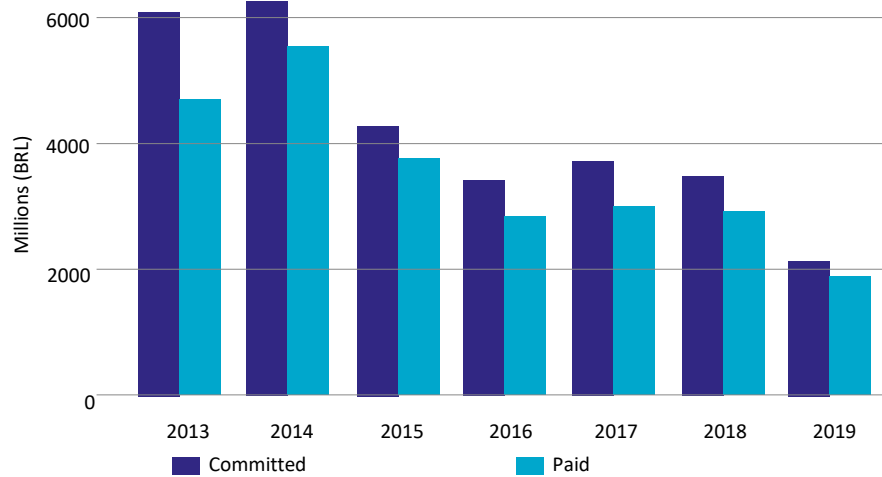
Concerning federal budgets, the WSS sector has low efficiency, executing only 33 percent of the funds in appropriated budgets (SIOP 2019)²³. These low rates of execution create illiquidity because taxes are subject to revenue sharing, and tax breaks awarded by the Federal Government reduce budget transfers that subnational governments receive. On the other hand, solvency risks in subnational government, such as the fiscal crisis in Rio de Janeiro in 2016, can present contingent liabilities to the Federal Government, because states might default on their debts to the Federal Government or receive bailouts.

At the state level, total budgets, and actual spending on WSS have also fallen drastically. Figure 11 below shows that state budget allocated and spent in the sector has been declining over the past six to seven years. Between 2013 and 2019, committed budget for WSS declined from R\$6 billion (US \$1.14 billion) to just over R\$2 billion (US\$ 0.40 billion). Executed or paid budget was generally only something over 75 percent of the committed budget between 2013 and 2019.

²³ This calculation considers approved budgets established annually in the Annual Budget Law (LOA) and actual financial execution over the fiscal years 2010 to 2019, with the analysis focusing on the 2012-2019 to guarantee comparability of information. The source of the information is the Federal Budget Panel of the Integrated Planning and Budget System (SIOP), whose data refer to the base of the Federal Government’s Integrated Financial Administration System (SIAFI) (SIOP 2019).

FIGURE 11

Budget Execution of WSS at the State Level (2013-2019)



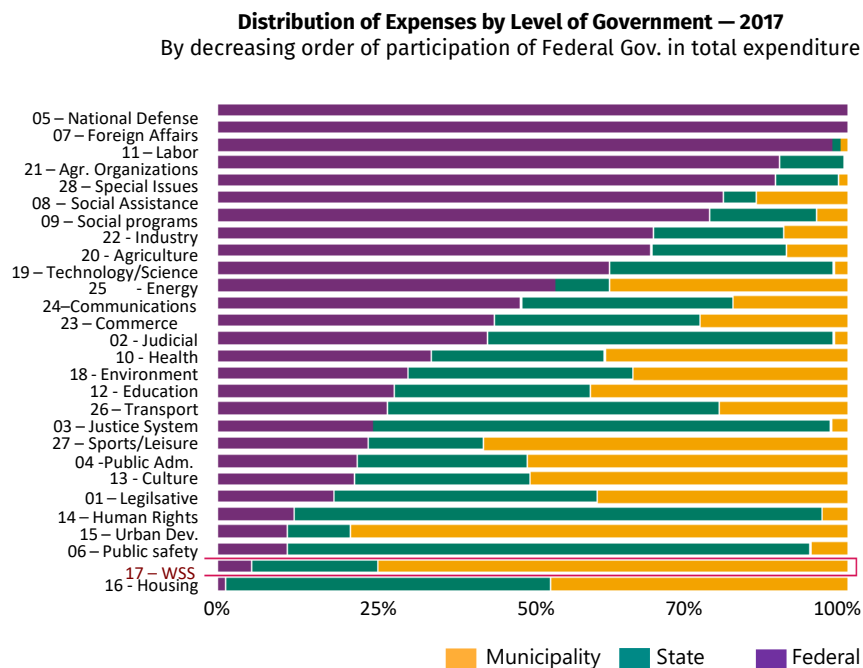
Note: Constant 2013 prices. *Source:* DCA/Finbra 2013-2019.

Ultimately, progress in the WSS sector depends highly on municipal budget execution. Because Brazilian law makes municipalities ultimately responsible for the provision of WSS services, actual spending of the sector's budget relies highly on this level of government. In 2017, WSS was second only to urbanism in terms of budget execution at the municipal level (Figure 12). Spending of this volume makes it vital to understand how municipal expenditure occurs, what are its patterns and characteristics, and what can be improved.

The influence of states and municipalities over health care, as well as the many social, economic, behavioral, and environmental factors that shape health, is most apparent in their budget decisions. Preventing a rise in health costs is an intrinsic objective of public expenditures. Yet with the COVID-19 pandemic, health spending expanded to make up more than 15 percent of state and local expenditures. The limited coverage of WSS services produced extra costs for health care systems locally and nationally. Hence improving budgetary efficiency in WSS could be an effective instrument for improving Brazilians' health and quality of life.

FIGURE 12

Distribution of Expenses by Level of Government (2017)



Source: BSPN, 2017.

Inequity in WSS public expenditures

Political influence has caused inequality in budget allocations between municipalities. Improving equity is fundamental for advancing the universalization agenda and promoting territorial development. Yet research²⁴ shows that informal arrangements between state and local authorities create a principal-agent problem and moral hazard issues that often play out in conflicts between providing local sanitation services and protecting the quality of water bodies. In the last 20 years, these informal ties have created high inequalities in spending on that important subsector: the more aligned a mayor of a municipality is with the state's governor, the more likely the municipality will receive budgetary support for water and sanitation²⁵. Politically and economically weaker municipalities are left behind in the competition for budget attention. The relationship between the effectiveness of budget implementation and speed of service expansion is strongly positive, which leaves many poorly performing WSS SOEs with limited capacity to attain universalization of services.

WSS budget allocations and investment have also been unequal between regions and states. The Southeast and South regions (Table 3), where WSS access is relatively high, have received a disproportionate share of funds, while in other regions, where WSS access gaps are greater, investments have been lower.

Disparities in access to budget allocations are making the expansion of services more expensive in Brazil's largest cities. Insufficient budgets for capital investments and service expansion are leaving fast-growing urban areas with lower rates of coverage. In areas with high population densities, access to WSS has not changed much over the last decade, even though expenditures in those areas can provide higher economic returns. In addition, WSS spending in urban areas has stagnated with high rates of spending inefficiency.

Making WSS expenditures more efficient is vital and so is tackling regional inequalities, given the importance of these basic services in improving human capital and enhancing incomes. Brazil as a whole has an average of per capita income of US\$12,000, yet Brazilian regions have startling inequalities. The Northwest region, for example, has average per capita income of only US\$7,800 which is comparable to Guyana. The Northeast region's figure is US\$5,900, similar to the level in Lesotho. At the other end of the scale, the Southeast and South regions have average per capita incomes of US \$13,500 and \$15,400, respectively, comparable to countries such as Bulgaria and Malaysia. Improving the efficiency of spending will contribute to reduction of regional and local inequality of income and socioeconomic status.

TABLE 3

Investments made in the WSS sector by region - 2018

	Investments in the WSS sector – 2018		
	R\$ million (USD million)	R\$ per capita (USD)	%
North	548.7 (104.1)	30.1 (5.7)	4.2%
Northeast	2,390.4 (453.6)	42.0 (8.0)	18.2%
Southeast	6,943.5 (1,317.5)	79.2 (15.0)	52.8%
South	2,070.3 (392.8)	69.5 (13.2)	15.7%
Midwest	1,207.7 (229.2)	75.0 (14.2)	9.2%
Brazil	13,160.6 (2,497.3)	63.1 (12.0)	100.0%

Source: SNIS, 2019

²⁴ Estache, A., G. Garsous, and R. Seroa da Motta. 2016. "Shared Mandates, Moral Hazard, and Political (Mis)alignment in a Decentralized Economy," *World Development*, Elsevier, vol. 83(C), pages 98-110. Also see IPEA. 2018. *Saneamento Básico no Brasil: Estrutura Tarifária e Regulação*.

²⁵ See for instance Instituto Trata Brasil. 2018. *Benefícios Económicos e Sociais da Expansão do Saneamento no Brasil*. http://www.tratabrasil.org.br/images/estudos/itb/beneficios/sumario_executivo.pdf

Benefit Incidence: Subsidy Targeting

A higher proportion of poorer individuals are being excluded from receiving the water and wastewater subsidies compared to that of richer individuals. The proportion of beneficiaries who receive tariff subsidies within each decile is higher in the upper deciles compared to that in the lower deciles for both water and wastewater consumption subsidies. The benefit incidence study revealed that as much as 29 percent of individuals in the bottommost decile are excluded from receiving water subsidies while as much as 60 percent of individuals from the same decile are excluded from receiving wastewater subsidies. Meanwhile, the corresponding figures of subsidized households (through tariffs) who were excluded from receiving the subsidies at the topmost decile are 7 percent and 14 percent only.

The benefit incidence analysis found that, in the absence of water and wastewater subsidies, the share of both expenditures as a share of total expenditures at the household level will increase most dramatically for the poorer as compared to the rich. For example, it is estimated that the share of water expenditure will increase by roughly 4.7 times for individuals from the bottommost decile from 1.4 to roughly 6.6 percent if the subsidies were not available to them. Similarly, it is estimated that the share of wastewater expenditure out of the total expenditure at the household level could increase from 0.7 percent to 8.1 percent translating to 11.5 times increase. Among the rich, the removal of subsidies is estimated to increase the share of both water and wastewater expenditures as a share of total household expenditures from 0.1 percent to 0.4 percent, respectively. This shows that the subsidies are especially important to alleviate the burden of water and wastewater consumption among the poorest in the country.

Properly designed subsidies for piped water and sewerage are important instruments to increase access to water and sanitation. In the context of poverty especially, where market forces alone do not result in adequate levels of service provision and consumption, subsidies can be important to help address the gaps in affordability without necessarily jeopardizing the objectives of cost recovery or economic efficiency. Thus, in the WSS sector, subsidies are important for the poor and do have a positive effect on this socioeconomic group. For subsidies to work better, however, it is important to increase utility service provision in those areas where the poor live, both in rural and urban areas; and to improve the efficiency in subsidy targeting.

The affordability analysis of WSS services shows the importance of subsidies to reduce the likelihood of declining accessibility over time. The international accepted threshold of 5 percent of water and sanitation expenditures as a proportion of household's expenditure is what determines affordability. If households spend in WSS more than 5 percent of their total expenditures, then WSS services are not affordable. Narzetti and Cunha (2020) showed that when the WSS tariffs are liberalized from subsidies and sanitation surcharges are incorporated to WSS tariffs levied by State-Owned Enterprises (SOEs), households will not be able to afford these services. It was found that in 22 out of 26 WSS SOEs households would spend more than 3 percent in WSS, while in 16 out of 26 WSS SOEs, households would spend more than 5 percent in WSS without subsidies.

Results of the benefit incidence analysis showed that, in general, water and wastewater subsidies in Brazil inadequately target the poor. An Omega Decomposition Analysis which shows the profile of efficiency in targeting subsidies to the poor, was performed. An Omega value (Ω) equal to 1, known as a neutral distribution, means that the proportion of the subsidy going to the poor equals their share of the population. Values higher than 1 are evidence of a progressive subsidy that destines a higher proportion of the subsidy to the poor; while values lower than 1 suggest a regressive subsidy that benefits wealthier households more heavily. For Brazil, the omega value is estimated to be at 0.88 nationally for water subsidies and 0.73 for wastewater subsidies. This indicates that the water and wastewater consumption subsidies are targeted inadequately to the most vulnerable or poor population.

The water consumption subsidies performed slightly better in targeting the poor in the rural areas ($\Omega = 1.01$) compared to in urban areas ($\Omega = 0.91$)²⁶. However, the same could not be said for wastewater consumption subsidies ($\Omega = 0.77$ for rural areas and $\Omega = 0.79$ for urban areas). The main elements of inefficient targeting among the urban areas were quantities of water consumed and access to piped water connection. The targeting performance of wastewater consumption subsidies are similarly inadequate across urban and rural areas. Inefficient distribution of subsidies could further contribute to the poor targeting performance of consumption subsidies. These inefficiencies could arise from the error of inclusion and error of exclusion. The former is defined as relatively richer individuals or households receiving the subsidies despite not needing them, while the latter is defined as relatively poorer individuals not receiving the subsidies despite needing them.

Nationally, the error of inclusion is around 22 percent while the error of exclusion is around 57 percent for water subsidies. The error of inclusion is much higher in rural areas, estimated to be around 67 percent. This would indicate that much of the water subsidies were reaching the better-off households in rural areas and would suggest a need to improve the level of targeting precision to the poor in these areas. On the other hand, the error of exclusion is higher in urban areas which suggests that more outreach to improve piped water access among the urban poor would be needed.

At the national level, the errors of inclusion and the error of exclusion for the wastewater consumption subsidy are 49 percent and 64 percent, respectively. Both errors of inclusion and exclusion are high as a nation, and across rural and urban. The extremely high level of the inclusion error for rural is consistent with extremely low sewer access. Only the households in the richest deciles in rural Brazil have the access to a network sewer.

Brazil's Fund Transfer Mechanisms

Brazil has a complex system for carrying out intergovernmental transfers, which consist of unconditional and conditional transfers, as well as mandatory and voluntary ones. Most intergovernmental transfers are financed through revenue-sharing rules stipulated in the 1988 Constitution. There are two categories of transfers from the Federal Government to the states: (1) constitutional transfers, corresponding to state participation in federal taxes, with some of these state resources tied to their allocation to specific sectors, such as education and health, and (2) conditional transfers (earmarked grants) that must be allocated to specific state programs approved by the Federal Government. The formula-based calculation of these transfers guarantees transparency and autonomy, keeping political interference at bay. Once realized, these transfers to the subnational governments are considered as executed by the Federal Government, but the states have a legal obligation to report back periodically concerning the realized (or not) expenditures.

Brazil, like many Latin American countries, does not have separate instruments for revenue sharing and equalization grants. To a large extent, transfer instruments combine and confuse devolution and distribution of equity objectives. The result is that in the end it is not clear what is being achieved in any dimension or objective.

²⁶ Omega decomposition shows the profile of efficiency in targeting subsidies to the lowest deciles of the income distribution.

BOX 4.

Brazil's Public Financial Management System and its relevance to the water sector

The Brazilian Public Financial Management (PFM) was established by the 1988 Constitution and generally follows international budget cycle standards. Brazil has a well-established legal framework for the formulation, execution, and monitoring of the budget, including medium-term perspectives. The budget cycle starts with the Government setting strategic goals to be implemented. This is followed by pluriannual planning and budgeting, budget execution, and financial reporting, ending with the external oversight of the Supreme Audit Institution (SAI) and the legislative bodies. The constitutionally established PFM instruments are designed to integrate multi-annual planning, budgeting, and financial management, complementing the controls with flexibility and transparency. Controls were further reinforced by the Fiscal Responsibility Law (FRL).

However, policy-based budgeting and productive spending have been hindered over recent decades. This has been caused by mandatory spending and budget rigidity, lack of focus on existing social protection programs, weaknesses in the subnational fiscal framework, and inefficiencies in the tax system (PEFA 2009 and IMF Art. IV 2020).

PFM reforms in recent years have been designed to support greater operational efficiency in spending, but they still lack focus on productivity and outcomes. The Government has been strengthening its capacity and procedures for managing spending more efficiently, both at the Ministry of Planning and Budget (MoP), and the executing agencies.

MoP has continued to refine its systems for performance reporting and evaluation of federal programs and has developed systems for monitoring the execution of voluntary transfers to subnational levels, through agreements (*convenios*) with states and municipalities. However, the main priority has been to control aggregate spending, with relatively modest efforts towards shifting away from compliance to autonomy of the line ministries and spending units. This orientation has not sufficiently encouraged managers to give greater attention to productivity and outcomes with a goal of yielding greater gains in operational efficiency (PEFA 2009).

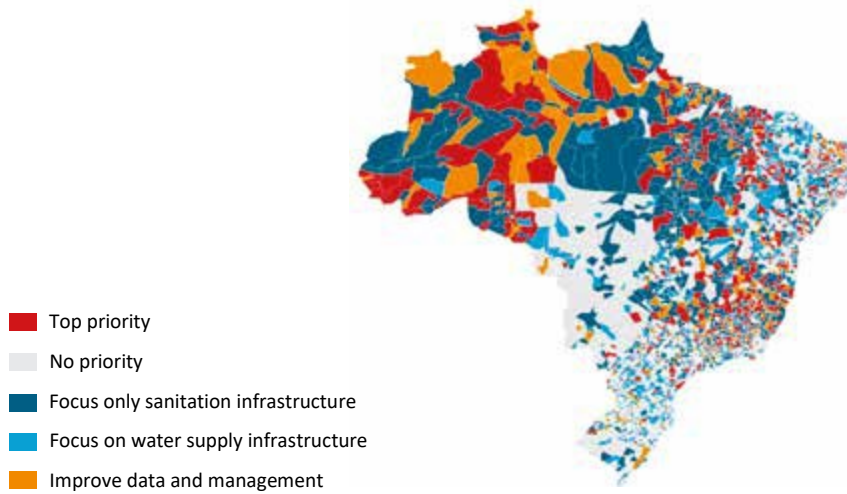
Certain municipalities have priority for receiving public WSS funding. The Applied Economic Research Institute of Brazil (IPEA) reveals that 961 of the 5,570 Brazilian municipalities (Figure 13), mainly in the North and Northeast, have the highest priority to expand access to public resources and make improvements in sanitation. This is due to limited water coverage in these municipalities and the high numbers of people exposed to environmental threats that poor sanitation brings. Private providers of WSS have Operational Expenditure (OPEX), on average, that is 25 to 28 percent lower than the national average which means that ramping up investments from private providers can enhance overall efficiency in operational expenditures of the sector.

With better incentives and structured contracts to efficiently expand WSS investments, important gains in social sectors such as health could result. For instance, Ferreira et al. (2021) found that the number of people requiring hospitalization due to waterborne diseases could fall by 157,000 for every R\$100 million (US\$20 million) invested in sanitation and 26,000 per R\$100 million invested in clean drinking water.

The cross-subsidization model practiced in Brazil is not a mere subsidy for poor households. Currently, it also includes transfers between municipalities, through revenue sharing, which is socially and financially unsustainable. Water tariff subsidy reform is required. Targeting and performance incentives for subsidy transfers are options to improve the efficiency of cross-subsidization.

FIGURE 13

Prioritization of WSS investments by municipality, 2020



***Note:** The prioritization investment index for Brazil is based limited coverage and attributions of Brazilian municipalities in terms of the deficit between regions and municipalities of treated water and sanitary sewage, lowest quartile of investments directed to reach the poorest populations (including city peripheries and rural areas); and largest gaps in the access of resources (including those most indebted municipalities).*

***Source.** IPEA (2020) Proposal of prioritization of public investments in water and sanitation in Brazil. TPD 2614.*



Beyond low investments in WSS infrastructure, challenges remain in coordinating the many multilayer programs and in finding management models that guarantee the economic and financial sustainability of water supply systems in cities and in rural areas. Although promising models such as the private, not-for-profit Union of Community Associations for the Maintenance of Water Supply and Sanitation Services (CENTRAL) have been developed, their coverage and operational capacity remain limited.

Despite the promising investment opportunities arising from the recently enacted law, the PFM environment in Brazil is likely to be less than favorable for public sector investments in WSS in upcoming years. In line with the government's priorities for improving the competitiveness of the Brazilian economy, a WSS reform agenda has been prepared. It aims to use the newly approved water and sanitation law to improve program budgeting, open new investment opportunities in the sector, and revive investments through new concessions. Federal authorities' extensive list of private providers and infrastructure concessions projects will help create a pipeline of critical projects (IMF, Art IV, 2020). However, that could take time. In 2021 the PFM in Brazil is operating in a narrowed economic environment that could seriously reduce budgetary resources, through such regimes as aggregate fiscal discipline, and the equitable allocation of resources (Box 4).

Low capacity of the state and municipal governments

There is a wide variation in MBSPs' quality, with many municipalities not even formalizing them.

Municipalities are required by law to have MBSPs in place to obtain federal funding for water and sanitation investments. However, as of 2017, 41.5 percent had created plans, according to the Brazil Institute of Geography and Statistics (IBGE). Those plans that did exist often contained no goals or were drafted incorrectly, with limited technical features²⁷. Drafting the plans is a highly technical process, requiring staff with specific skills in waterservice technology and financing and local context knowledge and understanding²⁸ (Figure 14).

State and municipal governments have too little fiscal space to raise external funds for WSS financing.

States and municipalities have been struggling with high debt and severe liquidity constraints. Some of the largest states have already defaulted on their debt repayments and are running arrears in wages and payments to suppliers. The Federal Government has provided substantial support through debt service relief over the years. The 2020 War Budget, enacted in response to COVID-19, helped offset revenue shortfalls and provided for extraordinary spending during the pandemic. This relieved some of the pressure. Still, reforming the subnational fiscal framework is a key priority towards sustaining the provision of core public services (IMF Art IV, 2020) over the long term.

As at the federal level, municipalities have low capacity to spend the already extremely low amounts that they have budgeted for WSS. Analysis reveals that this is due to (1) generally small deviations in aggregate expenditure, (2) high deviations in expenditure composition, (3) deviation in revenue collection, and (4) the balance of expenditure payment arrears. Technical capacity for implementing and managing WSS projects appears very weak at the municipal level. Such capacity is particularly important if complex PPPs and the new WSS framework are to succeed. In addition, public federal and state banks lack the technical capacity to coach the municipal administrations and PPPs. The need to increase in-house staff to implement Municipal Basic Sanitation Plans (MBSPs) placed a significant new financial burden on WSS companies. The increase led to not only higher wage costs, but increases in payroll taxes, social security, pensions, and other expenditures related to providing benefits to the larger staff. The staffing rise made budgets less effective in reaching strategic outcomes and dragged down financial performance.

²⁷ National Agency for Water - Agência Nacional de Aguas (2020). National Plan for *Saneamento Básico*. What is missing to progress? Available at: <https://www.ana.gov.br/>

²⁸ On July 15, 2020 the President sanctioned Bill No. 4,162/2019 and vetoed some of its provisions. The resulting approved text returned to Congress for deliberation on the vetoes with a final approval that took place as Law No. 14,026/2020.

Implications on the implementation of the new WSS law and related sector goals

Weak budget credibility and very low federal budget allocated to WSS may delay results in the sector's bloc approach. Under the new WSS framework, the Federal Government is pushing for a regional approach in WSS. States are required to create city blocs aimed at scaling up service and cross-subsidizing cities in the blocs. Federal funds are to go only to cities that join blocs. However, the extremely low Federal budget allocation may be insufficient to serve as a catalyzer for the implementation of the bloc framework.

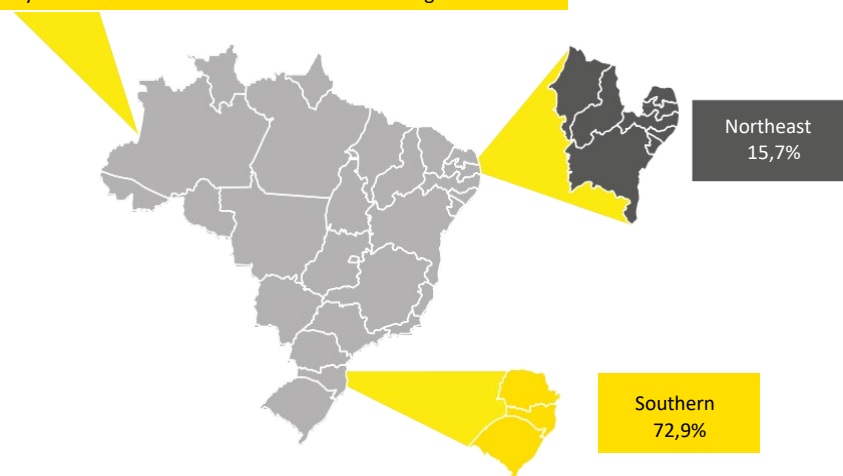
The current regulatory framework at the state and municipal levels is outdated and may delay implementation of the new law. To meet terms of the new law, the WSS framework will need major regulatory changes at the state and municipal levels, including special training for staff at regulatory agencies. Federal, state, and municipal governments will have to update their WSS policies and Pluriannual Plans and Budgets, to start implementing their WSS budgets.

Some state-owned enterprises (SOEs) may not be able to take part in the financing of the WSS millennium goals for year 2033. Brazil's 36 SOEs account for 76 percent of the country's WSS market. While three SOEs holding companies are listed in the stock market and are part of companies that have high revenues and margins, half of the SOEs are suffering losses. Even though SOEs' results improved in 2019 compared to previous years, they may publish deceiving results in the years 2020, 2021, and 2022 due to the financial stress induced by emergency conditions and responses. This can harm their standing and worsen their leverage capacity, especially for companies that have low profit levels or low or not published Net Debt/EBIDTA ratios, indicating that they may have difficulties accessing credit.

FIGURE 14

Municipal Basic Sanitation Plan

About 41.5% of the municipalities in 2017 had a Municipal Basic Sanitation Plan, and there was a very large regional inequality, specially between the Northeast and the Southern Region



Source. PIR, 2021.

Though a relevant legal framework is in place, institutional weaknesses can hinder linkages between medium-term planning and budget execution in some states and municipalities. State Planning and Management Secretariats (SEPLAGs) are the main entities coordinating planning and budgeting activities. A formal annual budget calendar is in place, under which all budget units, including those involved in WSS, are informed through a budget circular about their allocated ceilings for budget preparation under their Annual Budget Law (LOA). In theory, existing instructions and financial IT systems allow the budget units to prepare their draft budgets on time. An adequate level of stakeholder participation and discussions exists, with inter-secretariat committees supervising the overall budgeting process. Final decision on budget ceilings appropriation and distribution is subject to the executive's final review and approval by the state and municipal assemblies. However, this process rarely works in a smooth and timely way, because of limited institutional coordination and planning mechanisms to develop consensus in the review process of budget preparation.

Performance-based budgeting in the public sector could help WSS, but only if carefully planned and implemented, with full engagement from all government levels. In practice, the development of budgets based on the relationship between program funding levels and expected results from each program can be a tool to bring more cost-efficient outlays and effective budget outcomes. However, this approach needs to be carefully designed, with fully engaged PFM at the federal, state, and municipal levels. It would need extensive support from people with long professional experience in implementing reforms of performance budgeting.



Brazil has a complex and fragmented institutional set-up for WSS in which each of the country's municipalities "owns" service within its borders, but in most cases delegates operation to its state. At the same time, all of these enterprises are subject to policies of the Federal Government. Considering that Brazil consists of 26 states, the Federal District, and 5,570 municipalities, this decentralized configuration translates into enormous inequalities between the country's many WSS operators in planning, regulation, and quality of services²⁹.

In addition to creating a confusing institutional arrangement, the former Brazilian legal framework of 2007 was seen by all market players as outdated and ineffective. The new legal framework, which was approved in June 2020, despite lacking some basic elements to bring legal certainty to the activities of private entities, has general support by the sector stakeholders.

An important innovation of the new legal framework is a more robust role for ANA, which will now establish national regulatory guidelines for WSS services. This is expected to solve a long-standing problem of the country having countless regulatory agencies, many of them lacking minimum financial resources and structural capacity to act. This makes their oversight of the network weak or even non-existent and leaves them subject to local political interference.

For the new legal framework to be truly effective, assertive participation by the Federal Government will be essential. The government should act as an articulator between subnational units and should provide incentives for service owners and municipalities to align themselves with national guidelines. The Federal Government will also have to increase alternatives for financing so that operators can obtain the capital they will need to speed up the sector's build-out.

Concerning service provision, the new legal framework brings improvements that will allow competition between public and private companies, ensuring that service is provided by the entity that is best able to meet the goals and terms of the contract. The new framework also creates incentives for the formation of regional blocs. These will allow economies of scale in provision of service and cross-subsidies in which smaller, more needy municipalities will benefit by banding together with larger municipalities that have more resources. Finally, the new framework will encourage greater involvement in WSS issues by Brazil's people and greater awareness of the benefits that could come through universalization of WSS services.

Roadmap for implementing the law - Recommended policy options

This study shows that Brazil is not likely to reach its target of universalization by 2033 in urban areas and 2038 in rural areas without major reforms and higher sector funding to reach the unserved population. The Federal Government's budget proposal for 2021, sent to the National Congress, only reserves about 10 percent for investments of all kinds. The budget cuts WSS investments almost in half, from US\$6.8 billion in 2011 to US\$3.6 billion in 2019. Under the current investment levels and growth in coverage rates, the country will not reach universalization until 2050 or later, a delay of roughly two decades. The large reductions in sector funding make it even more important for Brazil to find ways to do more with less and optimize its budgetary allocation on a yearly basis. The funds it gets must be spent in an effective, efficient, and equitable manner.

²⁹ BNDES, for example, held the so-called "stand still" for all bank financing in the WSS sector for six months. In other words, it granted a grace period for interest and principal, maintaining the financing terms. Another measure that the bank took was to assess the impact on its main clients of reduced collections during the pandemic. Generally, companies that have a greater diversification of municipalities are feeling less impact in terms of revenue collections. In some regions, tariff payments were suspended.

To get back on track towards universal WSS services, Brazil needs to develop a road map that includes establishment of innovative policy, stronger institutions, and a comprehensive implementation strategy for the regulatory framework. Federal and state budgeting processes can be brought to bear to incentivize greater WSS investments and improvements in service providers' operational and commercial efficiency. Care will be required to target investments and make sure that funds are spent in a timely and economically beneficial way. Brazil has already established integrated planning for WSS through the PLANSAB³⁰. This creates a framework for better WSS policies, programs, and actions by working to upgrade the sector's budget planning and execution and to strengthen cooperation between the Federal Government, states, and municipalities.

Based on the WSS-PIR and WSS- PER assessments, a menu of reform options has been developed to support the implementation of the new water and sanitation law. Out of a long list of the reform options proposed in the two reports, the high priority recommendations based on stakeholder consultations are summarized below, broadly categorized into institutional, regulatory, and expenditures and investment themes:

INSTITUTIONS

- **Enhance coordination among key actors in the WSS sector.** Establish formal institutional coordination plan and rules between the federal and state governments, to streamline financial support and technical assistance to municipalities and implement Cisab mandates to improve financial allocations to the local governments.
- **Set standards to improve operational performance of WSS service providers.** Create tools and guidelines for the WSS regulators to use in monitoring the operational and commercial efficiencies under new concession contracts and service delivery models.
- **Build the capacity of the municipalities to develop their WSS plans.** Prepare capacity-building programs for WSS operators and develop a roadmap and guidelines for the applicability of efficiency standards for regional blocs. Implement support programs and improve the local governance WSS model.
- **Build resilience in WSS service providers.** Develop compensation mechanisms to aid service providers that waived defaults and payments due to COVID-19 relief measures. The concrete measures could include negotiating with financial institutions (e.g., BNDES, Caixa Economica Federal) for temporary suspension of debt repayments, or creation of working capital lines of credit for WSS investment.
- **Create a roadmap for implementing regional blocs.** Standardize the power delegated to blocs or micro-regions to ensure that the same criteria are adopted in different municipalities. In doing so, reform corporate governance and service delivery models of SOEs to help identify new roles, responsibilities, reporting, and monitoring arrangements of the WSS sector.

REGULATIONS

- **Develop reference standards for financial sustainability and cost recovery.** Develop bylaws to implement the new legal framework, which requires economic and financial sustainability, and establish training plans for economic and financial analysis.
- **Consolidation of Regulatory Agencies.** Promote standardization of the quality of regulation by giving ANA the role of "federal regulator" and the authority to issue reference standards for the subnational regulatory agencies.

³⁰ Fundamental principles that underlie the PLANSAB include universalization of service, equity, integrity, inter-sectorial measures, sustainability, public participation in decision-making, and an improving technological matrix.

- **Support ANA's role in the implementation of the new Law³¹.** Establish ANA secondary laws for reference standards, operational guidelines, and best practices for concession and PPP contracts.
- **Bolster WSS providers' competition.** Establish thresholds to lower service providers' costs in capital markets and strengthen bank competition so that financing conditions for private banks become more attractive.
- **Implement tariff and subsidy reforms.** The states need to work on regional tariff plans and streamline them into WSS plans and strategies. Reorient the subsidies to target the poorest population.

EXPENDITURES AND INVESTMENTS

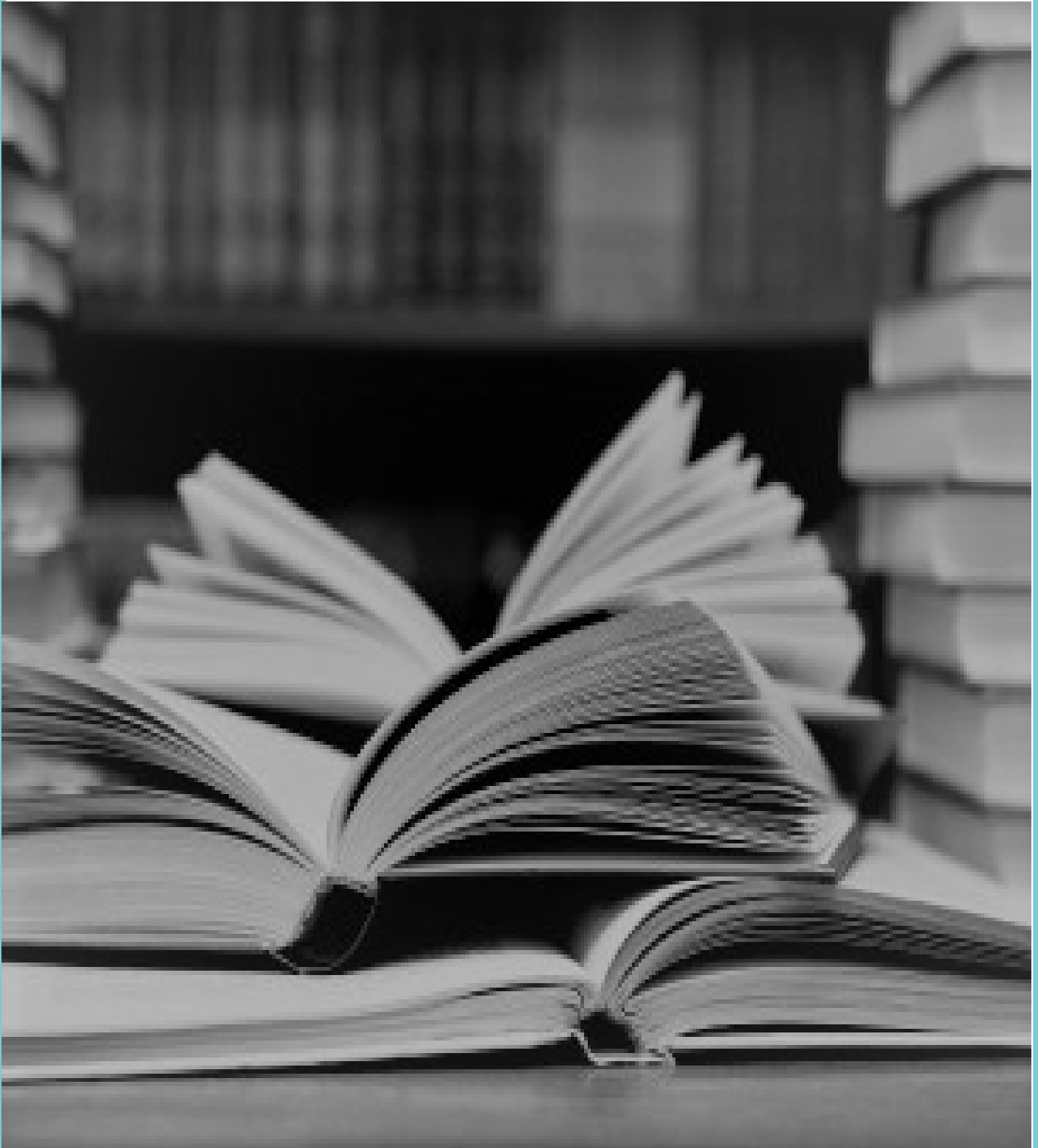
- **Develop revenue mobilization strategies.** Create and pilot incentives, investment strategies, and operational performance linked to budget execution in rural areas and informal settlements, including their governance model and application in PPP/concession contracts.
- **Create incentives for improved performance and sector investments.** Develop a state-level investment facility and fiscal tools to improve budget allocation, subject to efficiency and financial performance of SOEs. Establish performance parameters that monitor up-front payments made (outorga) and assess the fiscal burden of SOEs.
- **Give new attention to reaching the rural area and informal settlements.** Integrate WSS into social development and inclusion policies, given the importance of the sector in shielding human capital and preventing future disease outbreaks. Also, develop medium-term WSS budget prioritization plan to reach rural areas and informal settlements including incentives to bolster WSS expenditures in underserved communities.
- **Adopt medium-term plans.** Develop a concrete medium-term plan to reduce budgetary fragmentation among WSS programs and levels of government. This would also require promoting policy-based WSS budgeting and productivity thresholds for SOEs. Establish guidelines to reduce geographic inequalities, ignite WSS investments, and increase budgetary participation of the sector.
- **Use performance-based grants to increase the project pipeline.** Performance-based WSS grants could help connect the allocation of transfers and budgets to efficiency and medium-term goals. For this policy to be effective, the sector's current Public Finance Management (PFM) system must be improved. Create a roadmap for agile execution of funds through states' performance-based budgeting programs and develop a fiscal risk tool to assess budget allocation and efficiency.

The menu of high priority recommendations presented above forms part of the policy matrix below. The policy matrix was developed to identify the challenges and opportunities for the WSS sector in Brazil, based on the findings of the PIR and PER studies. The matrix is organized according to level of intervention (federal, state, or municipal) and priority for policy reforms in the WSS sector. It is important to characterize how and where the main policy recommendations should be implemented according to the regulatory, institutional, and public expenditures issues.

³¹ This involves improving governance, planning, and budget allocation for WSS in Brazil at three administrative levels, each with multiple sub-levels. At the federal level, four ministries are involved in WSS: Ministry of Economy (ME), Ministry of Regional Development (MDR), Ministry of Health (MinSaude), and Ministry of Environment (MoE). The state level has three secretariats with roles: Planning and Management (SEPLAG), Finance (SEFAZ), and Water Supply. At the municipal level, three secretariats are involved: Planning, Budgeting, and Management; Finance; and Works and Infrastructure.

POLICY MATRIX OF RECOMMENDATIONS

The policy matrix presented below was developed based on broad consultations with WSS institutions in Brazil. A first set of consultations took place in Brazil's Water Week, held in October 2020. A second consultation workshop with WSS institutions and regulators was held in December 2020. In those consultations, feedback was received from WSS experts and practitioners on the two reports, WSS-PIR and WSS-PER. Based on those consultations the policy reforms presented in the matrix were identified along with their level of prioritization for implementing the WSS Law passed in 2020.



Policy Matrix



Institutions

	Challenges	Opportunities
	Enhance coordination among key actors in the WSS sector	
	WSS sector actors are fragmented and lack coordination among the different levels of government and with other sector stakeholders, making it difficult to implement the new WSS law effectively.	The new WSS law creates an Interministerial Committee (Cisab) under MDR's leadership to implement the policy and coordinate the sector's financial allocation. It also establishes rules for better multilevel government coordination.
	Set standards to improve operational performance of WSS service providers	
	While the new law gives the National Water Agency (ANA) means to advance the performance and coverage of WSS services, there are no institutional guidelines and bylaws for ANA's stewardship role.	Supporting ANA to perform its new role as steward of federal guidelines and standards of the sector will help establish reference standards and evaluate the performance of subnational regulatory agencies and their compliance with the reference standards.
	Build the capacity of the municipalities to develop high quality WSS plans	
	Local governments have the responsibility to deliver and manage the WSS sector but have limited capacity to improve performance and expand service.	The new law opens opportunities for federal incentive programs or special programs to support municipalities in the preparation and monitoring of municipal basic sanitation plans.
	Build resilience plans for WSS service providers	
	COVID-19 and climate change are adding financial, operational, and economic stress to WSS SOEs. Resilience strategies for WSS SOEs are required.	Consolidation of COVID relief measures through concrete policies would help the major WSS players both public and private and build their resilience towards future shocks. This will also discourage "tariff populism" and provide more certainty to private providers in the future.
	Create a roadmap for promoting implementation of regional blocs	
	While the new law seeks greater efficiencies through the regional blocs, the sector has been lagging to develop specific guidelines for this strategy. There is variation in the capacity level at all three levels of government, and there are complex intergovernmental budgets and transfers and multi-governance issues.	Under the new law, prioritization will be given to regional blocs in the allocation of public resources and financing. This could help consolidate the decentralization of the WSS sector. The guidelines could include corporate governance and service delivery models of SOEs.

	Policy options	Priority	Level of Implementation
Institutions	Enhance coordination among key actors in the WSS sector		
	Establish formal institutional coordination plan and rules between the federal and state governments, to streamline financial support and technical assistance to municipalities and implement Cisab mandates to improve financial allocations to the local governments.	High	Federal, State, and Municipal
	Set standards to improve operational performance of WSS service providers		
	Create tools and guidelines for the WSS regulators to use in monitoring the operational and commercial efficiencies under new concession contracts and service delivery models.	High	State and Municipal
	Build the capacity of the municipalities to develop high quality WSS plans		
	Prepare capacity-building programs for WSS operators and develop a roadmap and guidelines for the applicability of efficiency standards for regional blocs. Implement support programs and improve the local governance WSS model.	High	State and Municipal
	Build resilience in WSS service providers		
	Develop compensation mechanisms to aid service providers that waived defaults and payments due to COVID-19 relief measures. The concrete measures could include negotiating with financial institutions (e.g., BNDES, Caixa Econômica Federal) for temporary suspension of debt repayments, or creation of working capital lines of credit for WSS investment.	Very high	Federal, State, Municipal
	Create a roadmap for promoting implementation of regional blocs		
Develop a roadmap for promoting regional blocs. Standardize the power delegated to blocs or micro-regions to ensure that the same criteria are adopted in different municipalities. In doing so, reform corporate governance and service delivery models of SOEs to help identify new roles, responsibilities, reporting, and monitoring arrangements of the WSS sector.	Very high	Federal, State, Municipal	



Regulations

Challenges	Opportunities
Developing reference standards for financial sustainability and cost recovery	
State and regional SOEs lack economic and financial sustainability regulations, so their tariff and revenue structures often don't generate enough funds to recover costs, even after regionalizing service delivery.	Increase technical assistance for economic and financial sustainability for regional and state models.
Consolidation of local/regional Regulatory Agencies	
There are no standard guidelines or reference standards for the regulators to address equity and efficiency in service delivery. This is a challenge because municipalities often have divergent strategies for WSS expansion.	The new legal framework seeks to bring about immense gains in access and performance of providers, authorizing the Federal Government to participate in WSS planning if needed.
Support ANA's role in the implementation of the new Law	
The new law provides limited federal authority to monitor and enforce secondary regulations for budget execution and performance of service providers.	In the new legal framework, ANA has enhanced authority to monitor and enforce terms of contracts, concessions, and budget execution.
Bolster WSS providers' competition	
Currently there is very little competition with regards to the bidding processes for long- term program contracts for WSS.	The new law imposes compulsory public tenders providing some transition and prorogation to WSS concession contracts. The law also addresses transition rules for the precarious provision of service without a contractual relationship.
Implement tariff and subsidy reform	
Tariffs are currently not systematically used to promote (1) productive efficiency, guaranteeing maximum yield with less cost, (2) distributive efficiency, reduction of the misappropriation of surpluses and other economic costs by the provider, and (3) allocative efficiency by spending on service expansion to generate greater aggregate revenue.	If regulatory tariffs become the norm instead of political tariffs, the operators may have more certainty of tariff changes for financial planning purposes. Reorienting subsidies to avoid errors of inclusion and exclusion could help bring about tariff reform.

	Policy options	Priority	Level of Implementation
Regulations	Developing reference standards for financial sustainability and cost recovery		
	Develop bylaws to implement the new legal framework, which requires economic and financial sustainability, and establish training plans for economic and financial analysis.	High	State
	Consolidation of local/regional Regulatory Agencies		
	Promote standardization of the quality of regulation by giving ANA the role of “federal regulator” and the authority to issue reference standards for the subnational regulatory agencies.	Very high	Federal
	Support ANA’s role in the implementation of the new Law		
	Establish ANA secondary laws for reference standards, operational guidelines, and best practices for concession and PPP contracts.	High	Federal and State
	Bolster WSS providers’ competition		
	Establish thresholds to lower service providers’ costs in capital markets and strengthen bank competition so that financing conditions for private banks become more attractive.	High	State and Municipal
	Implement tariff and subsidy reform		
The states need to work on regional tariff plans and streamline them into WSS plans and strategies. Reorient the subsidies to target the poorest population.	Very high	State and Municipal	



Expenditures and investments

Challenges	Opportunities
Develop revenue mobilization strategies	
Revenue mobilization is key to expanding the resource envelope and creating fiscal space but is unlikely to be sufficient if expenditure efficiency is not improved.	With the recent new framework for public investment in WSS, regional models could connect citizens to economic opportunities and bring about new investments from private sector and fiscal space for COVID-19 recovery and inclusion of WSS service.
Create incentives for improved performance and sector investments	
Increasing investments in WSS improve quality of service and quality of life for citizens, but investments are hampered by high staffing and pension costs of WSS SOEs.	While the private operator's share is only 6 percent of Brazilian municipalities, they are responsible for 20 percent of the total investment in the sector. Increasing the share of private operators would increase investments enhance sector performance.
Give new attention to reaching the rural area and informal settlements	
There is lack of social inclusion and regional equity for WSS federal transfers, subsidies, and budgets. A focus on equity and social inclusion is essential for implementing strategies to reach universalization..	Besides health, access to water and sanitation can generate benefits in productivity, food security, ecosystems, education, and local economic development.
Adopt medium-term expenditure plans	
Federal and state agencies do not apply medium-term WSS budget planning, making it difficult for the sector to develop investment plans that target progressive expansion of WSS services.	The new WSS law opens the possibility of medium-term planning. States can acquire fiscal space for public investment in WSS and other infrastructure areas by reviewing mandatory spending and indexation practices for regional equity and by improving incentives for efficiency improvements in current expenditures.
Use performance-based grants to increase the project pipeline	
The sector does not have a rich project pipeline, targeted investments to modernize operations, or long-term funding to meet the CAPEX required for universalization.	Developing methodologies to improve design and investment efficiency of WSS would increase the pipeline of future projects, which will lead the country for reaching its universalization goals and SDG 6 in all states.

	Policy options	Priority	Level of Implementation
Expenditures and investments	Develop revenue mobilization strategies		
	Create and pilot incentives, investment strategies, and operational performance linked to budget execution in rural areas and informal settlements, including their governance model and application in PPP/concession contracts.	Very high	Federal and State
	Create incentives for improved performance and sector investments		
	Develop a state-level investment facility and fiscal tools to improve budget allocation, subject to efficiency and financial performance of SOEs. Establish performance parameters that monitor up-front payments made (outorga) and assess the fiscal burden of SOEs.	Very high	State
	Give new attention to reaching the rural area and informal settlements		
	Integrate WSS into social development and inclusion policies, given the importance of the sector in shielding human capital and preventing future disease outbreaks. Also, develop medium-term WSS budget prioritization plan to reach rural areas and informal settlements including incentives to bolster WSS expenditures in underserved communities.	High	Federal, State and Municipal
	Adopt medium-term expenditure plans		
	Develop a concrete medium-term plan to reduce budgetary fragmentation among WSS programs and levels of government. This would also require promoting policy-based WSS budgeting and productivity thresholds for SOEs Establish guidelines to reduce geographic inequalities, ignite WSS investments, and increase budgetary participation of the sector.	High	Federal and State
Use performance-based grants to increase the project pipeline			
Performance-based WSS grants could help connect the allocation of transfers and budgets to efficiency and medium-term goals. For this policy to be effective, the sector's current Public Finance Management (PFM) system must be improved. Create a roadmap for agile execution of funds through states' performance-based budgeting programs and develop a fiscal risk tool to assess budget allocation and efficiency.	High	Federal and State	

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