

Social effectiveness and private sanitation concessions: the CEDAE auction in Rio de Janeiro, Brazil

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Abstract *Changes in the regulatory and legal framework for Brazil's water and sanitation sector (Law 14,026, July 15, 2020) require competitive bidding for service contracts, even in cases where the provision of services was previously delegated to state-owned utilities under program contracts. The aim of this study was to identify the actors who benefited from these changes to the legislation and assess the social effectiveness of the privatization of water supply and sewerage services in the state of Rio de Janeiro by investigating the auction of services provided by the public utility CEDAE in four blocks comprising 35 municipalities in April 2021. We conducted an exploratory analysis of secondary data and used the systemic integration method to identify the main actors involved in the concession process and the role they played. It is concluded that federal, state, and municipal governments, the Brazilian Development Bank, and the concessionaires have gained from the concessions, while the percentage of low-income populations connected to the sewage collection or drainage network is lower and tariffs are higher in municipalities served by the private sector when compared to the municipalities encompassed by the auction.*

Key words *Water supply, Sewerage systems, Effectiveness*

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Introduction

The privatization of water supply and sanitation services is nothing new. Since its creation in 1991, the main strategy used by the Sanitation Sector Modernization Program (PMSS) to achieve the aim of universal access to water and sanitation was to increase private investment and expand private concessions¹. Subsequently, Law 8,987/1995, governing the concession regime, stimulated state and municipal governments to put sanitation services out to tender². However, the concessions granted in the years that followed did not result in a significant increase in coverage of sanitation services among vulnerable populations.

In 2007, recognizing the need to improve access to water and sanitation, especially among low-income populations, the government created Law 11,445³, which establishes the following fundamental principles: universal access, comprehensiveness of sanitation services, economic efficiency and sustainability, tariff affordability, and public participation in the delivery of basic sanitation services. However, there are still some grey areas, such as ownership in the case of service provision across metropolitan regions, since these regions are made up of more than one municipality forming state sub-regions, which do not have the right ownership under the legislation.

Article 13, clauses I and II⁴ of the national sanitation law (Law 14,026/2020), which redesigned the country's basic sanitation regulatory and legal framework, provides that the allocation of federal resources should be contingent on the structuring of regional provision of water and sanitation services, providing a clear incentive for regionalization, as encouraged by the National Sanitation Plan (PLANASA) (Decree-Law 949/1969)⁵. However, unlike PLANASA, the new law requires competitive bidding for service contracts, allowing private enterprises other than state-owned basic sanitation companies (CESBs) to compete⁶ to provide regional water and sanitation services, meaning that the latter have therefore lost their privileged position. However, state governments remain responsible for creating regional blocks of municipalities for bidding purposes, called "regional basic sanitation units" (Law 14026/2020, article 7)⁴.

In 2019, 21 municipalities in the state of Rio de Janeiro had privately-operated sanitation services: 14 with full water and sanitation concessions, three with water concessions, two with

sanitation concessions, and two with public-private partnerships⁷ (one for the provision of sanitation services and the other for both water and sanitation services)⁸.

On 30 April 2021, the Rio de Janeiro state government auctioned water and sanitation services in four blocks of municipalities. These services were previously provided by the state's public water and sewerage utility, CEDAE (*Companhia State de Águas e Esgotos do Rio de Janeiro*) under a program contract with municipal governments⁹. The auction was held in response to pressure from actors with vested interests in the privatization of water and sanitation services in the state. The amount raised by the auction was R\$ 22.7 billion, 1.34 times more than the minimum bid of R\$ 9.7 billion¹⁰. The concession delegated the provision of part of the state's water supply to two consortiums for 35 years. However, there was no bid for block 3, comprising of Rio de Janeiro's west zone plus the municipalities of Itaguaí, Paracambi, Píñheiral, Piraí, Rio Claro, and Seropédica.

In light of the above, we might ask "Who gains from the granting of concessions for the provision of services formerly delivered by CEDAE?" This question is answered by this article, in which we present the state of sanitation in the municipalities encompassed by the CEDAE auction, focusing on services provided to low-income populations. We also describe the CEDAE auction, using the systemic integration method to identify the role played by different actors in this process, who are divided into two groups: those in favor and those against transferring the services formerly provided by CEDAE to the private sector. Finally, we analyze which actors have gained from the concessions and whether the transfer of water supply and sanitation services to private enterprises is likely to contribute to the social effectiveness of basic sanitation.

The social effectiveness and state of sanitation in the municipalities encompassed by the CEDAE auction

The National Basic Sanitation Plan (PLANAB)¹¹ is aimed at strengthening service management and provision to improve efficiency, efficacy, and effectiveness. Efficiency refers to cost reduction, using the least amount of inputs to achieve the highest amount of output¹². Efficacy is the extent to which an intervention produces the expected results¹² in terms of quality of the services provided, while effectiveness refers to the effect of government decisions and whether

the service adequately meets the demands and needs of the community¹². The social effectiveness of sanitation is therefore defined as the extent to which sector policies meet the demands and needs of vulnerable populations. The concept primarily concerns people who are denied access to fundamental human rights that should be guaranteed by the state. “The notion of effectiveness presupposes a real and true commitment to the social objectives and political demands of the community”¹³(p.633).

The 17 social development goals (SDGs) set out in the 2030 Agenda for Sustainable Development, to which Brazil is a signatory, includes SDG 6: Ensure availability and sustainable management of water and sanitation for all. Access to safe drinking water and sanitation is also a fundamental human right recognized by the United Nations (Resolution 64/A/RES/64/292, 28/07/2010).

Social effectiveness is the prime goal of the design and assessment of public policies and programs¹⁴ “created to guarantee social rights and better living conditions”(p.132) and should consider the “management capacity of public and private agents and the specific needs of target populations according to their level of vulnerability”¹⁴(p.132).

Based on the above, the information source used to assess the social effectiveness of sanitation among vulnerable populations was the *Cadastro Único* (CadÚnico), or “Unified Register”, a federal government database platform¹⁵ that identifies and characterizes low-income families and provides sanitation data for municipalities across the country (Table 1). Data on the overall population was obtained from the National Sanitation Information System (SNIS)¹⁶ (Table 2).

Indicators of coverage and the tariffs charged in the 35 municipalities encompassed by the auction were compared to those in the 21 municipalities mentioned above that already had privately-operated water and sanitation services before the auction⁸.

The municipalities encompassed by the auction saw a reduction in the proportion of vulnerable persons as a percentage of the estimated overall population between 2015 and 2018. In 2018, this proportion, based on the number of people registered in the *CadÚnico*¹⁷, was highest in São Francisco de Itabapoana (66.1%) and lowest in Casimiro de Abreu (8.5%) (Table 1).

Another important aspect is that, in 2018, only 65.7% of the people living in the municipali-

ties encompassed by the auction registered in the *CadÚnico* lived in households connected to the water distribution network, compared to 69.5% in the group of municipalities served by the private sector. In contrast, 61.8% of the vulnerable population in the municipalities encompassed by the auction lived in households that were connected to the sewage collection or drainage network, compared to 51.8% in municipalities served by the private sector (Table 1).

Social effectiveness in sewage collection services was not attained in the municipalities served by the private sector. Important arguments against privatization of sanitation services include “risk of divestment from one of the core components of basic sanitation, sewerage, just because it is not profitable”¹⁸(p.3).

According to data from the SNIS¹⁶, water and sewerage coverage in the overall population was higher in municipalities served by the private sector. In contrast, the mean tariff charged in the municipalities served by the private sector in 2018 (R\$ 5.41/m³) was considerably higher than in the municipalities encompassed by the auction (R\$ 3.69/m³) (Table 2). Despite higher tariffs, sewerage coverage among the overall population in the municipalities served by the private sector fell by 0.4 per cent between 2015 and 2018, from 71.3% to 70.9%. In contrast, in municipalities covered by the auction, coverage rose by 2.9 per cent, from 49.9% to 52.8% (Table 2).

The sanitation deficit, especially among vulnerable populations, was aggravated by severe water quality issues in 2020 and 2021 in the state capital due to a strong smell and taste in the wastewater supplied by CEDAE caused by geosmin^{19,20}.

Geosmin is produced by blue-green algae (cyanobacteria), whose growth is favored by an increase in the concentration of organic matter from sewage discharged into water bodies^{19,20}. This episode led to a boost in public support for the private management of the sanitation services provided by the CEDAE. This support was reinforced by the slow cleaning up of Guanabara Bay, as Rio de Janeiro’s picture postcards remained plagued by pollution²¹.

The concession process: the CEDAE auction

In 2017, the government of the state of Rio de Janeiro declared a financial “state of public calamity” and CEDAE was offered as collateral for the fiscal recovery plan agreement between the state and federal governments²².

Table 1. Percentage of the overall population registered in the Cadastro Único and percentage of this population living in households connected to the water distribution network and sewage collection or drainage network in municipalities encompassed by the auction of CEDAE and in municipalities served by the private sector. State of Rio de Janeiro, 2015 and 2018.

State of Rio de Janeiro and municipalities	Blocks (30/04/2021)	Percentage of the overall population registered in the Cadastro Único (%)		Water distribution network (%)		Sewage collection or drainage network (%)	
		2015	2018	2015	2018	2015	2018
State of Rio de Janeiro		28.2	24.9	75.5	75.8	72.3	72.9
Municipalities encompassed by the auction							
São Sebastião do Alto	1	14.6	10.6	44.3	47.8	43.1	51.1
Aperibé		11.1	11.2	88.6	94.1	89.4	89.9
Cambuci		15.5	13.2	72.9	73.0	74.7	83.6
Cantagalo		12.0	8.2	66.9	67.9	66.4	65.6
Duas Barras		8.6	8.6	60.0	72.8	4.3	40.6
Casimiro de Abreu		8.5	6.7	90.0	90.3	29.3	41.6
Cordeiro		9.2	6.7	85.5	90.2	87.9	89.4
Itaocara		13.5	10.7	79.2	79.3	78.5	76.4
Miracema		12.1	57.9	89.5	89.5	94.2	92.2
São Francisco de Itabapoana		73.8	66.1	18.9	20.2	0.3	1.1
Tanguá		47.0	42.2	29.9	39.6	39.3	35.1
Cachoeiras de Macacu		41.2	38.9	35.1	57.2	25.7	34.5
Rio Bonito		40.3	37.8	39.6	42.1	55.8	59.3
Saquarema		41.0	30.3	27.3	28.0	9.2	7.2
Itaboraí		32.8	32.4	23.1	21.4	42.0	38.0
Magé		46.4	37.9	34.3	31.0	46.8	46.5
Maricá		29.7	34.1	12.0	15.9	6.2	10.9
São Gonçalo		28.6	25.8	67.4	70.6	63.9	68.2
Miguel Pereira	2	10.2	9.3	49.9	56.9	38.4	44.1
Paty do Alferes		17.6	13.0	47.9	57.8	17.6	23.0
Rio Claro	3	9.1	7.4	59.6	68.7	64.1	73.5
Pinheiral		12.4	11.2	90.7	90.7	96.7	91.5
Piraí		8.7	6.5	80.7	78.9	76.4	79.2
Paracambi		35.9	37.6	81.8	79.9	89.8	88.4
Seropédica		38.1	36.1	97.5	70.5	54.4	38.8
Itaguaí		37.4	29.6	86.8	86.4	87.2	88.0
Belford Roxo	4	41.0	39.7	72.9	73.1	73.3	76.7
Japeri		51.7	41.1	77.0	61.9	60.2	52.8
Mesquita		32.1	29.4	86.4	89.8	89.0	93.5
Nilópolis		26.2	22.3	87.1	60.5	90.1	62.9
Queimados		51.1	40.2	77.9	79.0	79.6	81.2
São João de Meriti		26.0	21.1	92.4	92.8	93.6	95.2
Duque de Caxias		36.0	27.6	64.6	65.5	82.8	84.3
Nova Iguaçu		33.3	31.7	66.3	60.5	71.3	68.6
Rio de Janeiro ⁽¹⁾	1, 2, 3 and 4	21.4	19.9	95.2	94.9	91.3	91.9
Mean		27.8	25.8	65.1	65.7	60.4	61.8
Municipalities served by the private sector⁽²⁾							
Mean		26.4	22.1	66.8	69.5	48.7	51.8

Notes: (1) Neighborhoods in the municipality of Rio de Janeiro were divided into four different blocks⁹. (2) Municipalities served by the private sector in 2019 in the state of Rio de Janeiro⁸.

Source: Microdata from the Cadastro Único, 2015 and 2018¹⁵. Population estimates 2015 and 2018¹⁷.

Table 2. Total water and sewerage coverage and mean tariffs in the municipalities encompassed by the CEDAE auction and municipalities served by the private sector. State of Rio de Janeiro. 2015 and 2018.

State of Rio de Janeiro and municipalities	IN055_AE - Total water coverage index (%)	IN056_AE - Total sewerage coverage index (%)	IN004_AE - Mean tariff (R\$/m3)	IN055_AE - Total water coverage index (%)	IN056_AE - Total sewerage coverage index (%)	IN004_AE - Mean tariff (R\$/m3)
	2015			2018		
State of Rio de Janeiro	92.2	64.5	3.66	90.5	65.4	4.51
Municipalities encompassed by the auction						
São Sebastião do Alto	51.5	(-)	3.32	47.4	(-)	3.44
Aperibé	96.0	(-)	3.32	86.0	86.9	4.10
Cambuci	78.6	(-)	3.32	75.6	65.8	4.28
Cantagalo	77.9	73.4	2.00	69.9	100.0	4.87
Duas Barras	78.5	14.2	3.32	69.6	11.6	3.99
Casimiro de Abreu	98.7	57.0	2.45	76.4	47.8	0.60
Cordeiro	99.1	46.1	3.32	95.2	40.2	1.90
Itaocara	90.8	(-)	3.32	88.3	73.9	3.90
Miracema	99.8	97.0	3.43	90.3	95.1	4.50
São Francisco de Itabapoana	73.3	1.2	3.32	42.1	1.0	3.93
Tanguá	67.7	31.2	3.32	51.7	26.8	3.66
Cachoeiras de Macacu	87.0	56.9	0.76	94.5	54.6	0.24
Rio Bonito	86.6	(-)	3.32	77.0	73.5	4.47
Saquarema	91.8	73.4	5.25	97.3	74.0	6.16
Itaboraí	80.5	42.3	3.32	74.1	34.7	5.31
Magé	78.9	42.4	3.32	72.9	37.6	4.39
Maricá	58.3	12.1	3.36	41.8	10.0	3.04
São Gonçalo	84.5	38.6	3.90	81.3	33.5	1.59
Miguel Pereira	99.9	45.5	3.32	78.8	(-)	2.86
Paty do Alferes	72.5	65.1	3.63	69.1	(-)	4.16
Rio Claro	67.6	(-)	3.32	67.2	(-)	3.98
Pinheiral	90.2	100.0	3.32	74.2	86.7	4.26
Piraí	99.5	36.1	3.32	77.5	32.2	0.05
Paracambi	73.6	45.9	3.32	70.7	70.8	4.79
Seropédica	70.8	33.3	3.32	68.4	32.8	7.14
Itaguaí	89.0	39.2	3.32	83.2	39.5	5.13
Belford Roxo	80.3	40.7	3.35	76.5	38.8	4.06
Japeri	74.0	(-)	3.32	72.4	(-)	3.47
Mesquita	97.1	43.7	3.34	97.0	48.4	4.78
Nilópolis	99.8	99.8	3.32	97.7	93.1	4.07
Queimados	85.2	40.7	3.32	84.1	42.2	2.99
São João de Meriti	93.4	48.9	3.32	91.6	60.5	4.50
Duque de Caxias	86.2	44.1	3.33	84.5	43.1	3.17
Nova Iguaçu	93.6	45.1	3.33	93.2	45.0	0.13
Rio de Janeiro ⁽¹⁾	98.3	83.1	3.83	97.4	85.1	5.18
Mean	84.3	49.9	3.29	77.6	52.8	3.69
Municipalities served by the private sector⁽²⁾						
Mean	90.0	71.3	4.35	90.6	70.9	5.41

Notes: (1) Neighborhoods in the municipality of Rio de Janeiro were divided into four different blocks⁹. (2) Municipalities served by the private sector in 2019 in the state of Rio de Janeiro⁸. (-) Indicators not informed and therefore not included in the calculation of the mean.

Source: National Sanitation Information System, 2015 and 2018¹⁶.

The auction of CEDAE was held mainly to obtain funds to reduce a debt with the federal government, which paid a R\$ 2.9 billion loan granted by BNP Paribas to the state government in 2017 to pay overdue salary payments that expired at the end of 2020²³.

The CEDAE auction raised around R\$14.4 billion for the state government²⁴. However, as of June 2021, the federal government had still not been reimbursed²³. The Attorney General's Office filed an appeal against an injunction issued by the Supreme Court preventing the federal government from collecting the debt, which amounted to R\$ 4.3 billion in 2021. The appeal was still awaiting judgement in June 2021²³.

Four consortiums made bids in the CEDAE auction, which was organized by the Brazilian Development Bank (BNDES)¹⁰: Redentor, Iguá Saneamento (which did not have operations in the state of Rio de Janeiro), Consórcio Rio Mais Operações de Saneamento S. A. (Saneamento Ambiental Águas do Brasil and BRK Ambiental), and AEGEA (otherwise known as Prolagos).

AEGEA and Iguá Saneamento presented the winning bids to provide water and sanitation services in three of the four blocks encompassing 29 municipalities¹⁰. Block 3 did not receive bids and was redesigned and put out to tender in December 2021²⁵. The details of the auction are shown in Chart 1.

Various actors played an important role in making the auction come to fruition. We used the systemic integration method to map these actors and identify the motivations and interests for and against the auction.

Method

Exploratory analysis and the systems approach as a tool for evaluating private sanitation concessions in the state of Rio de Janeiro

We conducted an exploratory analysis of secondary data for the period 2015-2018 derived from CadÚnico microdata and the SNIS. We compared indicators of coverage and mean tariffs charged in the 21 municipalities served by the private sector or public-private partnerships (PPPs) mentioned above⁸ and municipalities covered by the CEDAE auction.

There was fierce competition between the consortiums for the most profitable blocks. Each group for and against the auction had different

motivations. The systemic integration approach is a planning methodology that helps identify these forces in order to gain an insight into the main interests involved, individual benefits, and general interest so that necessary changes can be made, in the present case primarily geared towards improving the social effectiveness of sanitation services in the state of Rio de Janeiro. Actor mapping was carried out using relevant legislation and recent news and scientific articles on the topic.

The systemic integration method is underpinned by three concepts: system, network, and scale. The general systems theory was proposed by Ludwig von Bertalanffy²⁶ in the 1940s with the aim of integrating different scientific specialties, based on the understanding that each one contributes to the whole. There is one additional element, synergy, where the whole is greater than the sum of its parts^{27,28}. The "system" represents the whole and the parts the "network" of interactions, which can either be a network of integration or disintegration and exclusion. The network therefore helps understand social actor interactions and spaces of negotiation²⁹. In addition to the concepts of system and network, the concept of scale of operation shows the importance of gearing actions towards a given reality in a specific physical, territorial space³⁰.

We used the systemic integration method to identify each social actor involved in the auction, observing conflicting interests over the provision of sanitation services in the state of Rio de Janeiro. The actors configure the network that acts for or against the concession process and the system corresponds to basic sanitation policy across municipalities in the state of Rio de Janeiro, geographic scale of operation, and space of negotiation of the social effectiveness of sanitation. The main actors involved in the concession process are outlined in Figure 1.

Results

Actors involved in the concession process

In favor of the concession: federal, state, and municipal governments

Federal government: The national sanitation law⁴ was created precisely when the COVID-19 pandemic was taking hold in the country, meaning that public consultation and participation was limited. The new law makes competitive bidding mandatory for local governments that wish

Chart 1. Information on the CEDAE auction held on 30 April 2021.

Blocks	Winning consortium	Minimum bid	Bid	Date contract signed
Block 1: made up of 18 neighborhoods in the south zone of RJ and 18 cities, including São Gonçalo and Maricá.	AEGEA	R\$ 4.036 billion	R\$ 8.2 billion, 103.13% above the minimum bid	August 2021
Block 2: made up of the Barra and Jacarepaguá regions of RJ (20 neighborhoods from the west zone) and the cities Miguel Pereira and Paty do Alferes.	Iguá Saneamento	R\$ 3.172 billion	R\$ 7.3 billion, 129.68% above the minimum bid	August 2021
Block 3*: made up of 22 neighborhoods in the west zone of the capital and the neighboring municipalities of Itaguaí and Seropédica, as well as four other municipalities.	-	R\$ 908 million	No bids made	-
Block 4: made up of 106 neighborhoods in the center and north zone of RJ and eight cities, including Duque de Caxias, Belford Roxo and Nilópolis.	AEGEA	R\$ 2.503 billion	R\$ 7.2 billion, 188% above the minimum bid	August 2021

Note: *14 cities, in addition to the west zone of RJ and six municipalities that were part of the original block 3 proposal, were included in the auction held in 2021 won by the Grupo Águas do Brasil - Saneamento Ambiental Águas do Brasil (SAAB) Saab Participações II SA with a bid of R\$ 2.2 billion, against a minimum bid of R\$ 1.16 billion²⁵.

Source: Brazilian Development Bank, 2021¹⁰.

to delegate the provision of water and sanitation services. The creation of this law clearly illustrates the federal government's interest in privatizing the management of country's water and sanitation services. The federal government benefitted from the auction of CEDAE, insofar as it meant that the government of the state of Rio de Janeiro was able to return the funds transferred to pay off the debt with BNP Paribas. Nevertheless, the debt was still outstanding in June 2021^{18,23}.

State government: Moments before the auction, held on 30 April 2021, the Rio de Janeiro state legislature (ALERJ) decided to suspend the auction (Bill 57/2021). Shortly after, however, the state governor Cláudio Castro decreed in the official government gazette that the auction should go ahead³¹. In May 2021, the Governor's chief of staff signaled that a new auction would be held for block 3, including new markets and making it more attractive³². The state government seeks to raise additional funds from the auction of block 3.

Of the R\$ 22.689 billion raised by the sale of blocks 1, 2 and 4, R\$ 522.269 million was apportioned to the Instituto Região Metropolitana and R\$ 14.478 billion to the Rio de Janeiro state government, to be paid in three disbursements in 2021, 2022, and 2025²⁴.

Local governments: The 29 municipal governments that adhered to the concession plan will receive R\$ 7.688 billion²⁴ from the initial sale, plus funds from variable grants and revenue raised from tax on services (*Imposto Sobre Serviços - ISS*) over the 35-year concession period³³. To receive these funds, the municipal governments must develop municipal basic sanitation plans. As from 31 December 2022 (article 19, Law 14,026/2020)⁴, these plans will be mandatory and should include goals, guide investment in the sector, and present an appraisal of vulnerable areas in the municipality.

Investors (private companies): The Canada Pension Plan Investment Board (CPP Investments) invested R\$ 1.1 billion to acquire a stake in Iguá Saneamento (Block 2), while the investment holding company, Itaúsa, acquired a stake in AEGEA Saneamento (Blocks 1 and 4) for R\$ 1.3 billion just days before the auction³⁴. These negotiations show that the auction attracted investors motivated by profit.

The Brazilian Development Bank (BNDES): BNDES offered to finance around R\$ 17 billion of the amount that the winning bidders will have to shell out up to 2033 to provide universal access to sanitation services in the municipalities

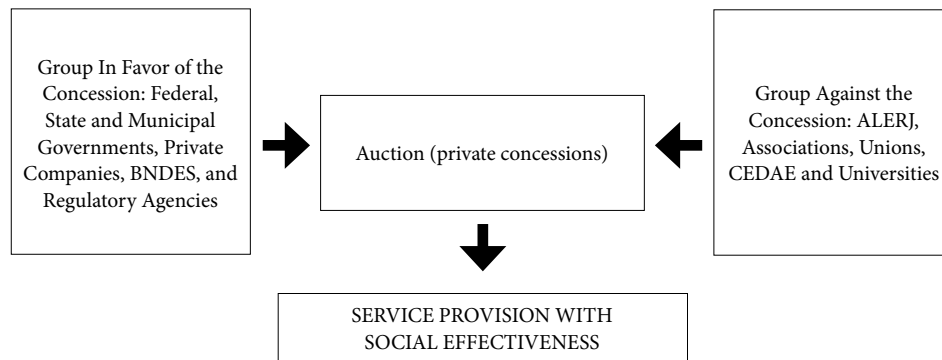


Figure 1. Flowchart of the actors involved in the CEDAE auction held on 30 April 2021.

Source: Authors.

served by the concessions¹⁰. The bank is allowed to finance up to 30% of the minimum R\$ 10.6 billion grant established in the bid notice and up to 55% of projected investment over the first 12 years of the concessions³⁵. The involvement of the BNDES aims to encourage investment from capital markets and share the risks associated with long-term investments¹⁰.

Regulatory agencies

The National Water Agency (ANA): Law 14,026/2020⁴ seeks to provide regulatory coherence at sectoral level by tasking the ANA with establishing reference standards to reduce the risks posed by the fragmentation and heterogeneous nature of subnational regulators (municipal, intermunicipal, and state)³⁶. This attempt to regulate the sector aims to ensure the legal certainty and stability of contractual relationships³⁷, boosting interest in the auction from investors.

The State of Rio de Janeiro Energy and Sanitation Agency (AGENERSA): The bid proposals were required to confirm the consortiums' commitment to pay an amount equivalent to 0.5% of total revenue from bills charged to AGENERSA for contract regulation and inspection⁹. This charge has been in place since 2015, when CEDAE operated the water and sanitation services³⁸ and is at odds with the provisions of article 7 of Law 14,026/2020, which state that regulatory and oversight agencies should be autonomous and independent.

Against the concession

The Rio de Janeiro state legislature (ALERJ): ALERJ tried to stop the auction, approving a bill (PDL 57/2021) to impede the bidding process. However, a decree issued by the governor and injunction granted by the Rio de Janeiro State Court of Justice ensured it went ahead³¹.

Association of State Sanitation Companies (AESBE): AESBE filed a lawsuit in the Supreme Court calling into question the constitutionality of the national sanitation law (Direct Action of Unconstitutionality - ADI 6,882/2021)³⁹. The lawsuit questions article 16, which prohibits sanitation service program contracts. AESBE argues that the law violates the Federal Constitution, in particular article 241, which provides that public services, including sanitation, can be provided directly by the state in a centralized or decentralized manner or indirectly, by concession (tender) or public consortium⁴⁰. A favorable judgement could potentially lead to the revocation of the concessions.

National Association of Municipal Sanitation Services (ASSEMAE): ASSEMAE made a statement via an article written by its director of legal affairs, Ronaldo Pinheiro⁴¹, which questions the timing of the new law and how it was approved. According to Pinheiro⁴¹, the circumstances of the pandemic ended up limiting public participation and the country was focused on other priorities. He also criticizes the fact that the country "granted the private sector the 'prime steak' of sanitation [services], with the neck meat still hanging on

the overburdened and indebted shoulders of the state”, unlike many countries around the world, which have “remunicipalized” services (France, Argentina, Germany, among others)^{22,42}. The association filed a direct action of unconstitutionality in the Supreme Court (ADI 6,583/2020)⁴³ questioning the provisions of the national sanitation law⁴.

Unions: The likelihood of mass redundancies at CEDAE influenced the regional labor court’s ruling in favor of a request filed by a group of unions and worker centers to stop the auction three days before the event⁴⁴. However, the president of the Supreme Court overturned the ruling, impeding proceedings relating to the CEDAE auction in the lower courts³².

CEDAE: The former chairman of CEDAE, who occupied the post for eight years between 2007 and 2014, expects that there will be an increase in tariffs for the end user as the concessionaires will not benefit from the tax immunity enjoyed by state-owned companies. According to the former chairman, outdated prices and the promise of investment to the tune of R\$ 30 billion over the 35-year concession period mean that hikes in tariffs are inevitable³².

Universities: According to the *Grupo de Estudos dos Novos Illegalismos* (New Illegalisms Study Group) at Fluminense Federal University, the neighborhoods in Rio’s west zone are controlled by militias³². In addition, in several underserved areas the only source of water are water trucks filled up clandestinely under the control of the militias⁴⁵.

In a publication produced in collaboration with the Oswaldo Cruz Foundation, Ferreira⁴⁶ claims that concessions will “adversely affect poor populations who cannot afford to pay for the service, because the goal of private companies is profit and not to guarantee fundamental human rights, which is the responsibility of the state” (p.23). Ramos, director of the state of Bahia’s public water utility company, *Empresa Baiana de Águas e Saneamento S.A.* (EMBASA), and Brito, professor at Rio de Janeiro Federal University, claim that the total cost of water and sanitation services in the state of Rio de Janeiro will rise⁴⁷. In addition, the bid notice does not clearly define low-income areas, meaning that the concessionaires will be able to escape the main challenge in providing universal access to water and sanitation and achieving social effectiveness: serving informal settlements⁴⁷.

Discussion

Private concessions and the social effectiveness of sanitation services

By encouraging the privatization of the management of water and sanitation services, the new national sanitation law runs counter to the trend over the last decade in dozens of cities throughout the world where governments are retaking the reins of water distribution^{22,42}. The state government wants to raise funds to pay off its debts. Municipal governments, the service owners, are interested in raising funds from service concessions. The BNDES supports the auction, encouraging concessions by predicting gains from the loans granted to the concessionaires. The new legislation tasks the ANA with proposing goals and indicators to regulate services. Private investors spot opportunities inherent in an essential service and natural monopoly conditions⁴².

The most pressing challenge for the managers of CEDAE is tackling the water supply crisis caused by sewage pollution in the Guandu River Basin, resulting in the production of geosmin, which produces an unpleasant odor and taste in the water. AGENERSA fined CEDAE for the contamination of drinking water in the metropolitan region of Rio de Janeiro in 2020 with geosmin because it did not disclose reports confirming the presence of the substance. The agency ordered the company to seek solutions and bear the costs of acquiring equipment and activated carbon, an alternative treatment for removing geosmin from the water²⁰.

Under the concession agreements, the concessionaires are responsible for sewage collection and treatment and are granted the right to supply water, with CEDAE remaining responsible for water treatment.

Will CEDAE have the capacity to maintain the quality of water treatment? The increased concentration of sewage in the water catchment area results in higher costs. Will the water quality problem be resolved if CEDAE no longer provides sewage collection and treatment services?

Recognizing that the prime goal of private companies is profit, when water and sanitation services are regionalized less “attractive” municipalities are included within blocks of “profitable” municipalities. However, doubts still arise as to whether the goal of universal access to services will be met by the new operators.

Are tariffs likely to increase? Will low-income populations be served? Federal, state, and municipal governments and concessionaires have gained from the CEDAE auction, but will low-income populations also benefit from the privatization of the management of sanitation services? A key factor justifying the remunicipalization of water services in various cities around the world are the increased prices charged by privately-operated services^{22,42}.

In 2015 and 2018 in the municipalities served by the private sector, water supply coverage was lower among vulnerable populations than in the overall population (Tables 1 and 2). The percentage of the low-income population connected to the sewage collection or drainage network was higher in the municipalities encompassed by the auction (Table 1). The findings also show that the mean tariffs charged in the municipalities served by the private sector were higher than those in the municipalities encompassed by the auction (Table 2).

Final considerations

This assessment of the social effectiveness of sanitation services helped identify whether private concessions are likely to achieve universal access to services and improvements in quality of life among vulnerable populations living in underserved areas. It can be concluded that private water and sanitation concessions in the state of Rio de Janeiro have increased tariffs without improving sewage collection and water supply coverage among low-income populations.

Brazil's new national sanitation law provides a new regulatory and legal framework for the water and sanitation sector that encourages the privatization of the management of water and sanitation services while many cities around the world are remunicipalizing water distribution.

The systemic integration method used by this study enabled us to present the different interests involved in the concession process, which envisages gains for the governments involved, the BNDES, and investors. However, it is essential to adopt a management approach that prioritizes vulnerable populations, guaranteeing their fundamental human right to safe and clean drinking water and sanitation.

Collaborations

FCM Reis participated in study conception, data analysis and interpretation, and drafting the article, and approved the final version to be published. DC Kligerman participated in study conception, data analysis and interpretation, and choosing the methodology, and critically revised the article and approved the final version to be published. SC Cohen participated in study conception and data analysis and interpretation, and critically revised the article and approved the final version to be published. JMR Nogueira participated in study conception and data analysis and interpretation, and critically revised the article and approved the final version to be published.

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