ANALYSIS OF THE INTEGRATED BASIC SANITATION CONCESSION MODEL ADOPTED BY THE MUNICIPALITY OF SÃO SIMÃO, GOIÁS

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ABSTRACT

Objective: To assess the integrated concession model adopted by São Simão, a municipality in the state of Goiás, which encompasses water supply, sanitary sewage, and urban solid waste management services.

Theoretical Framework: Law 14,026 established the year 2033 for the universalization of water supply and sanitation services and the year 2024 for the implementation of environmentally adequate final disposal in Brazilian municipalities (Brasil, 2020a). Due to reduced federal funding for investment, the federal government has sought the involvement of private entities to ensure the capacity for investment, operation, and maintenance of these services.

Method: Information about the federal government's strategy was obtained from the websites of the Ministries of Regional Development and Economy and the Caixa Econômica Federal. For the case study of the integrated concession, research was conducted on the reference studies of the modeling and the bidding notice, made publicly available by the municipality on its website.

Results and Conclusion: The tariffs obtained in the concession modeling indicate an average commitment of 4.12% of the household income, in line with international benchmarks for expenditure on basic sanitation and consistent with market-practice values. Tariff affordability and the economic-financial feasibility of the project were enhanced by the synergy among the three sanitation sectors.

Research implications: The model enables the achievement of the goals set by the new legal framework for sanitation through a standard concession, without any counterpart or additional input from the municipality.

Originality/Value: The integrated concession model represents an innovative venture with the potential to boost the economic and financial sustainability of universal access to basic sanitation in the country.

Keywords: Integrated Concession, Small Municipality, Basic Sanitation, Economic-Financial Sustainability.

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ANÁLISE DO MODELO DE CONCESSÃO INTEGRADA DE SANEAMENTO BÁSICO ADOTADO PELO MUNICÍPIO DE SÃO SIMÃO, GOIÁS

RESUMO

Objetivo: Avaliar o modelo de concessão integrada adotado por São Simão, município do estado de Goiás, que abrange os serviços de abastecimento de água, esgotamento sanitário e manejo de resíduos sólidos urbanos.

Referencial teórico: A Lei 14.026 estabeleceu os anos de 2033 para a universalização dos serviços de abastecimento de água e esgotamento sanitário e de 2024 para a implantação da disposição final ambientalmente adequada nos municípios brasileiros (Brasil, 2020a). Com a redução de recursos da União para investimento, o governo federal tem buscado a participação de agentes privados para assegurar capacidade de investimento, operação e manutenção desses serviços.

Resultados e conclusão: As tarifas obtidas na modelagem da concessão indicam um comprometimento médio de 4,12% da renda familiar, adequadas às referências internacionais para gastos em saneamento básico e compatíveis com os valores praticados no mercado. A modicidade tarifária e a viabilidade econômico-financeira do projeto foram favorecidas pela sinergia entre os três setores do saneamento.

Implicações da pesquisa: O modelo viabiliza o atingimento das metas do novo marco legal do saneamento através de uma concessão comum, sem contraprestação ou outro aporte do município.

Originalidade/valor: O modelo de concessão integrada representa um negócio inovador, com potencial de impulsionar a sustentabilidade econômico-financeira da universalização do saneamento básico no país.

Palavras chave: Concessão Integrada, Município de Pequeno Porte, Saneamento Básico, Sustentabilidade Econômico-Financeira.

1 INTRODUCTION

According to a population estimate carried out by the Brazilian Institute of Geography and Statistics (IBGE, 2020), small municipalities - with less than 20 thousand inhabitants - currently represent 67.92% of the number of Brazilian municipalities. These municipalities are also those with the highest deficit of basic sanitation according to the National Sanitation Information System (SNIS, 2020).

Based on this panorama, it becomes indispensable to develop models that ensure the technical and economic-financial sustainability of basic sanitation services in this universe of municipalities, commonly affected by the absence of planning instruments, lack of qualified professionals and scarcity of financial resources for the provision and expansion of services.

Among the strategies of the federal government to meet the demand of mayors, who seek technical and financial assistance from the Union for infrastructure solutions, is the creation, in 2017, of the Fund to support the structuring and development of concession projects and public-private partnerships (FEP), known as FEP CAIXA.

The fund is coordinated by the Special Secretariat of the Investment Partnerships Program (SEPPI) of the Ministry of Economy and is administered and managed by the Caixa Econômica Federal (CAIXA), with the purpose of promoting the realization of state and municipal concessions through the financing of studies and development of concession projects and public-private partnerships of subnational entities in sectors considered to be priority, such as basic sanitation, including solid urban waste (CAIXA, 2022).

Thus, in 2018, the EFF selected and formed a group of pilot projects to start its work and build a solid basis for the structuring of concessions and PPPs (CFEP, 2018). In the basic sanitation sector, five projects were selected, representing five different realities for structuring a model and subsequent replication.

Although concessions that integrate, partially or fully, water supply and sewage services are not new, in the case of São Simão, the great innovation, unprecedented in Brazil and abroad, is to integrate also the services of treatment and final disposal of urban solid waste in the same...
concession. The intention of the federal government to propose this model was to seek to "compensate for the lack of scale of the services by the economies of scope provided by the synergies arising from the provision of the three services - water, sewage and waste - by a single provider" (ME, 2020).

Considering that the challenge of universalizing basic sanitation is especially greater in small municipalities and, being the São Simão/GO project situated in this universe, this study set out to evaluate the then conceived model of integrated concession.

2 THEORETICAL FRAME

Small municipalities currently represent more than 67% of the number of Brazilian municipalities, according to data released by the IBGE (2020) and presented in Table 1.

<table>
<thead>
<tr>
<th>Table 1. Brazilian municipalities, according to population size</th>
<th>Number of municipalities</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 20,000 inhabitants</td>
<td>3,783</td>
<td>67.92%</td>
</tr>
<tr>
<td>between 20 001 and 50 000 inhabitants</td>
<td>1,110</td>
<td>19.93%</td>
</tr>
<tr>
<td>between 50 001 and 100 000 inhabitants</td>
<td>351</td>
<td>6.30%</td>
</tr>
<tr>
<td>more than 100,000</td>
<td>326</td>
<td>5.85%</td>
</tr>
<tr>
<td>Total Brazilian municipalities</td>
<td>5,570</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Own development based on IBGE (2020).

The analysis of the stratified data of SNIS (2020) shows that the deficit of basic sanitation in this universe of municipalities is even greater than the national average, as observed in Table 2.

<table>
<thead>
<tr>
<th>Table 2. Analysis of the deficit in basic sanitation in small municipalities</th>
<th>Number of municipalities</th>
<th>Estimated total</th>
<th>Served with water supply</th>
<th>Attended with sanitary exhaustion</th>
<th>Water supply</th>
<th>Sanitary exhaustion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>5,570</td>
<td>211 755 692</td>
<td>175 091 347</td>
<td>114 615 022</td>
<td>82.69%</td>
<td>54.13%</td>
</tr>
<tr>
<td>Municipalities with up to 20,000 inhabitants.</td>
<td>3,783</td>
<td>31 797 750</td>
<td>20 113 254</td>
<td>8 161 786</td>
<td>63.25%</td>
<td>25.67%</td>
</tr>
</tbody>
</table>

Source: Own development based on IBGE (2020) and SNIS (2020).

As highlighted by Aragão, Pereira & Silva (2022), in Brazil, the majority of companies providing water and sewage services are public and, to provide their services, they need to make major investments and manage complex infrastructure. For Cabral et al. (2022), these companies still consider financial issues as a priority, which demonstrates little mobilization for the achievement of goals such as the universalization of services.

With regard to the final disposal of municipal solid waste, it is possible to see from the SNIS (2020) that, of the 2,162 controlled landfills and landfills in operation in the country, 67.44% of these (that is, 1,458) are concentrated in municipalities with less than 20,000 inhabitants.

Considering that Law 14.026/2020 (Brazil, 2020a), which updated the legal framework of basic sanitation in the country, established the deadlines of 2033 for the universalization of water supply and sanitary sewage services and of 2024 for the implementation of the
environmentally adequate final disposal of waste in Brazilian municipalities, it becomes
indispensable the development of models that ensure the technical and economic-financial
sustainability of basic sanitation services in small municipalities.

To achieve the goals set in the new legal framework for sanitation, it is estimated that
R$144 billion in investments in water supply and R$354 billion in sanitation (ABCON &
KPMG, 2020) would be needed, in addition to R$10.30 billion in investments to make possible
the universalization of the adequate disposal of solid waste, in the form provided for in the
National Policy on Solid Waste (PNRS) (ABRELPE, 2015). Despite the identified need and the
established goals in the sectoral policies and plans, as pointed out by the Fiscal Policy
Observatory of the Getúlio Vargas Foundation (FGV, 2022), there is no tendency to stabilize
or reverse the drop in investments started in Brazil (Figure 1).

Thus, with the current economic scenario marked by the reduction of the availability of
resources for investment in the Union budget, strategies to attract the participation of private
agents have intensified in the federal government as an alternative to ensure investment
capacity, operation and maintenance of basic sanitation services. The Federal Development
Strategy for Brazil, for the period 2020-2031 (EFD 2020-2031), established by Decree
10.531/2020, establishes, among others, the following guidelines:

- increase the capacity of federative bodies in planning and structuring infrastructure
  projects and in regulating public services, so as to improve the quality of public
  service provision and provide greater security for the expansion of private initiative
  participation;
  ...
- encourage the creation of regulatory models for concessions and public-private
  partnerships for sanitation and solid waste;
  ...
- promote the emergence of innovative business models that are enabling systemic
  gains for mobility, sanitation, popular housing, the economy and public safety (Brazil,
  2020b).

The analysis of the 2020-2031 EFD highlights the federal government's commitment to
expanding partnerships with the private sector as one of the solutions to leverage resources for
the demands for improving and expanding infrastructure and providing basic sanitation
services.
3 METHODOLOGY

In order to contextualize the provision of sanitation services in the municipality of São Simão, information was used available in the Municipal Plan of Basic Sanitation (PMSB) and in the Reference Studies prepared under the EFF CAIXA and disclosed on the website of the City Hall.

3.1 Characterization of the Study Area

São Simão, a municipality located in the state of Goiás (Figure 2a), had its origin in 1930, on the banks of the Paranaíba River, on the border between the states of Goiás and Minas Gerais. The initial settlement was submerged in the 70s, with the construction of the dam of the São Simão Hydroelectric Power Plant (Figure 2b), which has the capacity to generate enough energy to supply about 6 million homes (São Simão, 2021a; SPIC Brasil, 2021).

Paradoxically to the availability of water resources, one of the problems faced by the population of São Simão is the lack of water in a considerable part of the city, as reported in terms of commitment of adjustment of conduct signed between the municipality and the Public Prosecutor's Office of the State of Goiás (MPEG, 2019). The same document points to other irregularities in the supply system, besides the lack of water: inadequate treatment of the water distributed, the absence of a concession from the environmental organ for the capture of water in the existing wells, the absence of an instrument for collection by the services of water supply and sanitary drainage, high consumption and waste of water.

In this regard, it is noted that the average per capita consumption in the State of Goiás is 147.55 L/hab.dia (SNIS, 2020), while in São Simão reaches 334.5 L/hab.dia, especially due to the absence of measurement of consumption and charging of tariff to users, which therefore does not provide any stimulus to rationalize consumption or to control and reduce losses, despite these being fundamental principles established in the National Policy of Basic Sanitation.

In the last census carried out by the IBGE, in 2010, the population of São Simão was 17,088 inhabitants and currently is estimated at 21,318 people (IBGE, 2021a). According to the studies developed in the framework of concession modeling (São Simão, 2022), 87.7% of the population is served by the public water supply network, which is taken from deep wells and disinfected through chlorination tablets, with no fluoridation of the distributed water. According to the documents, the discontinuity of the supply occurs due to a lack of pressure in some areas of the municipality's headquarters, attributed to the intense consumption of water.

São Simão has 74.6% of its population served with sewage collection and treatment, surpassing the average for the State of Goiás, which is 58.18% (SNIS, 2020). The municipal
headquarters has a sewage treatment plant, implanted in 2013 with the appeal of the National Health Foundation (Funasa), which had its first operating license issued only in 2020, made feasible by the federal government, after liaison with the state environmental body so that, with the support of the studies carried out for the concession, technical alternatives to overcome the constraints that prevented its emission were found (ME, 2020).

In 2011, Funasa also received funds to expand the existing landfill with the construction of a new trench, warehouses for sorting recyclables and purchase of vehicles and equipment. However, as indicated by the PMSB (São Simão, 2021b), the new trench still remains unsuitable for receiving waste, for not having been impermeable, nor are there any structures for draining rainwater, capturing, storing and treating percolated water. Despite the investments made, the municipality remains disposing of its waste in the open air on site, without cover or any technical and operational criteria. It should also be noted that, as the PMSB states, before final disposal, the waste is manually turned over by the waste pickers for the selection of the material that can be reused.

In 2018, the municipality of São Simão was selected as one of the federal government’s pilot projects under the EFF CAIXA (CFEP, 2018), receiving funding for the preparation of concession feasibility studies (EVTEA) and technical assistance provided by Caixa throughout the structuring process until the signing of the concession contract, which tends to be an important role of support and knowledge transfer to municipalities, especially smaller ones.

Thus, the municipality of São Simão published, on 26/10/2021, Competition Notice No. 003/2021 for the common concession of public water supply services, sanitary depletion and solid waste management, holding the opening session of the envelopes in February 2022, at the headquarters of B3 S.A. - Brasil, Bolsa, Balcão, which resulted in the signing of the concession contract in June 2022 (São Simão, 2022).

3.2 Evaluation of the Grant Model

The assessment of the integrated concession model adopted by the municipality of São Simão was composed, in this work, of two parts:

- Identification and assessment of key assumptions identified in the business model; and
- Assessment of the replicability potential of the model based on the information obtained in the previous step.

To survey information about the strategy of the federal government and FEP CAIXA was carried out research on the websites of the Ministry of Regional Development, the Federal Caixa Econômica and the Special Secretariat of the Investment Partnerships Program (SPPI), linked to the Ministry of Economy.

The case study of the integrated concession of the municipality was carried out from the documentary research of the referential studies of the modeling and the bid notice, made public by the municipality under Competition No. 003/2021 and made available on the website of the City Hall.

To underpin the discussions related to the delivery model addressed, documents from different sources obtained by means of bibliographic survey were used - scientific articles, laws, decrees, among others.
4 RESULTS AND DISCUSSION

4.1 Analysis of the Business Model Bidded by the Municipality of São Simão

The following analyzes the main premises identified in the business model proposed by the municipality of São Simão.

4.1.1 Purpose and contractual targets

The purpose of the tender procedure is to delegate to a private partner the provision of three public services:

- Water supply: encompassing the whole system, from raw water abstraction, water treatment, to the reserving and distribution of treated water;
- Sanitary exhaustion: covering the whole system, from the collection and transport of sewage, including the building connection of sewage, to the corresponding treatment and final arrangement, including that of sludge originating from the operation of collective or individual treatment units;
- Urban solid waste management: restricted to the treatment and final disposal of household solid waste and urban cleaning waste.

As regards services relating to the management of solid urban waste, it is noted that, as provided for in the concession contract (São Simão, 2022), the responsibility of the municipality of São Simão will remain the provision of urban cleaning services, as well as the "collection of solid urban waste, within the concession area, and the transport of the waste to the final destination".

Another aspect to be considered is that the national guidelines consider, besides the three services granted in this model, the drainage and management of urban rainwater as components of the concept of basic sanitation.

As defined in the concession contract, the targets of the services will be measured by the regulatory body according to the criteria set out in the tender specifications (annex to the contract) and any failure by the concessionaire to comply with them, "for acts or acts attributable to it", will be classified as an offense of a very serious nature, applying the penalties provided for in the contract.

Among the main goals of the concession contract is the universalization of access to water supply and sanitation services in the concession area within five years, that is, by 2027, taking into account the deadline set in the new legal framework for sanitation (that would be by 2033). It will also be up to the concessionaire to take the necessary actions to attend to progressive targets for the reduction of water losses in the system and to implant a mechanism for reusing the treated sewage in the treatment stations.

Another concession target is the implementation of a manual sorting unit and a landfill in up to three years, that is, by 2025, and, as established in the contract, the units should have the capacity to attend to the concession period and still a useful life remaining three years after the expiry of the concession period for operation by the public entity.

In this regard, it is noted that the deadline for reaching the target (2025), although it seems appropriate to the case in question, considering that it will be up to the concessionaire to search and acquire the area for the new landfill, to prepare projects and to authorize the environmental body for the implantation, execution of the work and obtaining the operating license in this period, exceeds that provided for in the new legal framework of sanitation for the environmentally adequate final disposal of the waste small municipalities (August 2024).

From the social point of view, two aspects should be highlighted in the concession contract with regard to the inclusion of waste pickers' associations/cooperatives in the
management of solid waste: the concessionaire should carry out retrofitting works in existing sorting sheds in the area of the current landfill, where waste pickers’ associations/cooperatives operate (and will continue to operate), and also the contract provides that the recyclable materials resulting from the segregation carried out by the concessionaire in its sorting unit will be obligatorily forwarded and donated to these associations/cooperatives, with the objective of "producing social benefits, such as the generation of jobs, income and improvements in the working conditions of waste pickers".

The targets proposed in the integrated concession will therefore make it possible for the municipality to reach the targets of the new legal landmark for sanitation for the three services, through private investments estimated at around R$ 49 million (CAPEX).

4.1.2 Model concession contract

The São Simão concession was structured in the common concession modality, which is defined in Law No. 8,987/1995 (Brazil, 1995) as the one in which the public administration delegates to a private individual, at his own risk, the execution of a public work (be it of construction, in whole or in part, conservation, renovation, extension or improvement of any works of public interest) "in such a way that the concessionaire's investment is remunerated and amortized through the operation of the service or work for a determined period".

Analyzing its application by small municipalities, the main advantage of this model lies in the fundamental characteristic of this modality which is that it does not require any kind of contribution/consideration from the municipality and, therefore, there is no fiscal commitment from the Administration and nor the need to structure guarantees by the public entity to the private partner for possible cases of default of this partner.

Thus, in the case of São Simão, the economic and financial sustainability of the concession will occur through the collection of tariffs directly from the users, for the three services that will be provided: water supply, sanitary depletion and solid waste management.

In this regard, it is important to highlight that the new legal framework of sanitation (Brazil, 2020a) ensures the collection of solid waste management services by means of taxes, tariffs and other public prices, according to the regime of provision of the service, besides providing that the non-proposal of collection instrument for these services constitutes revenue forgone. However, only 151 Brazilian municipalities declared in 2020 to have achieved financial self-sufficiency with the management of solid urban waste (MSW), raising enough revenue to cover the expenses of the services provided (SNIS, 2020).

Given that the municipality of São Simão does not currently have a collection instrument for basic sanitation services, or even for water supply, it is essential to analyze the variation in the tariff proposed in the concession and the ability of the population to pay.

4.1.3 Users’ ability to pay

There is no definition in Brazilian legislation or regulations of the National Water Agency (ANA) of methodology or benchmark for the analysis of users' ability to pay for basic sanitation services, although this is considered one of the factors to be considered in the structure of remuneration and collection of services according to the new legal framework of sanitation.

To analyze the users' ability to pay in this study, the following benchmarks were identified by international entities for household expenditures on water supply and sanitation services:

- The United Nations (UN) considers that these costs should not exceed 3% of family income (UNDP, 2006);
• The European Bank for Reconstruction and Development, on the basis of the benchmark analysis of several countries, considers that the limit would be 5% (Fankhauser & Tepic, 2005);

• OWAFT (2015), which is the government department regulating the sanitation sector in England and Wales, considers values between 3% and 5% as limits of the commitment of family income for these services.

Considering the estimated per capita consumption data (140 L/hab.dia) and the occupancy rate per household (2,807 inhab/domicile) indicated in the Engineering Studies published as a reference in the bidding of the concession of São Simão/GO, an estimate of monthly average consumption of 11.8 m³ of water per household is obtained. However, for the analysis of the ability to pay it has to be considered that, according to the legislation of the municipality (São Simão, 2019) the minimum tariff practiced in São Simão is equivalent to the consumption of 15 m³.

Thus, from the reference tariff structure of the Bid Notice it is possible to obtain an average value of the invoices to be paid by users for the services provided in the concession (Table 3), for comparison to the average family income obtained from the monthly household nominal income per capita of the resident population in the State of Goiás (R$ 1,258/inhabitant) according to the National Survey by Continuous Household Sample (PNAD) of the IBGE (2021b).

<table>
<thead>
<tr>
<th>Services</th>
<th>Average monthly spend per household (R$)</th>
<th>Weight of monthly household income expenditure (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water and Sewage</td>
<td>93.90</td>
<td>2.66%</td>
</tr>
<tr>
<td>Water, Sewage and MSW</td>
<td>145.50</td>
<td>4.12%</td>
</tr>
</tbody>
</table>

Source: The authors, 2023.

In this way, it is concluded that the tariffs obtained in the modeling of the integrated concession of São Simão are appropriate and compatible with the international references of commitment of family income with expenses in basic sanitation, even though the international references do not include the services of solid waste management in the calculation of the benchmarks, as will occur in the analyzed municipality.

The analysis of the values practiced for the residential consumer in Goiás shows that the average total value of the user account in São Simão (considering the water consumption of 15 m³/month as a reference), will be compatible with the values practiced in other municipalities of Goiás for water supply and sanitary depletion services, even after the inclusion of the public service of solid waste management (Table 4).

<table>
<thead>
<tr>
<th>Provider</th>
<th>Type of provider</th>
<th>Service</th>
<th>Monthly user account amount (in R$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SANEAGO (serves 225 of the 246 municipalities in Goiás)</td>
<td>state company</td>
<td>water + sewage</td>
<td>166.14</td>
</tr>
<tr>
<td>Caldas Novas</td>
<td>municipal authority</td>
<td>water + sewage</td>
<td>123.15</td>
</tr>
<tr>
<td>Catalan</td>
<td>municipal authority</td>
<td>water + sewage</td>
<td>148.63</td>
</tr>
<tr>
<td>Buriti Alegre</td>
<td>private concessionaire</td>
<td>water + sewage</td>
<td>209.14</td>
</tr>
</tbody>
</table>

Table 3. Analysis of the monthly family income commitment for payment for sanitation services in São Simão/GO

Table 4. Comparison of sanitation tariffs applied by providers in the State of Goiás, for the residential user, with estimated water consumption of 15 m³/month
Analysis of the Integrated Basic Sanitation Concession Model Adopted by the Municipality of São Simão, Goiás

However, it is important to consider that the modeling of the tariff structure cannot simply be extrapolated and generalized to other municipalities, even if of the same size, since it is related to the investment projections (CAPEX - Capital Expenditure), operation and maintenance (OPEX - Operational Expenditure) and revenues, which are intrinsic to each project.

4.1.4 Economic and financial viability of the project

For the analysis of the weight of each of the public services in the concession, the projected revenues and the referential investment costs (CAPEX) and operating costs (OPEX) for each sector indicated in the Referential Business Plan, Annex X of the Bidding Notice, which is the document that presents the assumptions considered and the data used in the economic-financial modeling of the concession, which allowed the pricing of the reference price of the bid (São Simão, 2022). The analysis of these data is presented in Table 5.

Table 5. Composition of CAPEX, OPEX and revenues projected for each sector in the integrated concession of São Simão/GO

<table>
<thead>
<tr>
<th>Sector</th>
<th>CAPEX (R$)</th>
<th>OPEX (R$/year of operation)</th>
<th>Revenue (R$/year of operation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water supply</td>
<td>16 844 598</td>
<td>2 482 872</td>
<td>6 965 101</td>
</tr>
<tr>
<td>Sanitary Depletion</td>
<td>13 484 755</td>
<td>3 624 723</td>
<td>5 572 081</td>
</tr>
<tr>
<td>Urban solid waste management</td>
<td>19 001 459</td>
<td>2 654 223</td>
<td>6 118 698</td>
</tr>
<tr>
<td>Total</td>
<td>49 330 812</td>
<td>8 761 818</td>
<td>18 655 880</td>
</tr>
</tbody>
</table>

The analysis presented shows that, in the case of the integrated concession of São Simão, there was a balance in the proportion of the distribution of the costs of CAPEX, OPEX and in the estimated revenue of the project for each concession sector.

As previously treated, the municipality of São Simão has a privileged situation compared to other municipalities, for having great coverage of the water supply systems (87.7%) and sanitary drainage (74.6%). Should there be a need for major expansion of these services, the weight of these systems would be much greater in the concession, impacting on the value of the tariffs to be charged to the user.

Thus, there is no way to state that there will be economic and financial viability in the integrated concession of the three public services in any situation where it is applied, making necessary the projection of investments, costs and expenses necessary to reach the goals of providing the services and modeling in each specific case. However, it is possible to identify in advance some factors in the integrated concession that support the economic and financial viability of this type of project.

The new legal framework of sanitation already prohibits the double collection of administrative or managerial costs to be paid in charging for basic sanitation services and corroborating in this sense the integrated concession comes to optimize such costs, because when hiring single company for the provision of three services that present strong synergy among themselves, a sharing of certain expenses occurs, as for example:
• Managerial workforce involved in the planning and supervision of the concession contract;
• General administrative workforce (purchasing, human resources, job security, financial, accounting, etc);
• Installation and expenses of office/headquarters, depot, equipment/vehicle yard, workshop, etc;
• Deployment, maintenance and operation of user service structure (answering point, call center, virtual agency);
• Execution of actions for credit recovery and reduction of default;
• Carrying out and updating the registration of users;
• Implementation and maintenance of a commercial management system;
• Processing, dispatch and delivery of single invoice for all three services;
• Bank costs incurred to collect users in a single ticket.

As for the last two related, it is important to point out that one of the main gains of the integrated concession is to become a facilitator of the implementation of the cobilling of public services, as the hypothesis expressly provided for in the new legal framework for sanitation, thus realizing the collection of the tariff of services for handling urban solid waste in the same bill for the consumption of water and sewage, contributing to the gain of scale in the commercial management and economic-financial sustainability of the provision of the services.

Also, from the technical point of view, it is possible to point out an interesting intersection between the sewage and solid waste sectors in the activities of the final disposal of the sludge generated in the sewage treatment plants and in the treatment of the liquid effluent (percolated) generated in the sanitary landfill.

Another factor to consider is that the integrated concession of the three services has the potential to provide scale gain not only for the private partner (and consequently for the user fees), but also for the government due to the sharing of transaction costs that involve the planning, structuring and complex contractual monitoring of a concession.

4.1.5 Market attractiveness

The São Simão concession was considered a test of the federal government in relation to the new landmark for basic sanitation, because during the passage of the Law there were strong criticisms that smaller cities would have difficulty in attracting the interest of investors, who would be looking for only larger projects, such as the concessions that have been structured by the National Bank for Economic and Social Development (BNDES) for the State of Amapá, the metropolitan region of Maceió and large blocks in the State of Rio de Janeiro (Rittner & Bitencourt, 2021).

In this sense, the modeling of the integrated concession sought to challenge this logic in a small municipality and the success of the bidding, won by a consortium of companies, demonstrated the willingness of the market for this type of initiative, as evaluated by the Brazilian Association of Private Concessionaires of Water and Sewage Utilities (ABCON) and the Brazilian Chamber of Construction Industry (CBIC) (Diniz, 2022).

While the integration between the traditional water and sewage sectors with the solid waste sector was seen as a complicating factor by the market, since the bidding required the presentation of a certificate of operation of both activities for the purpose of technical qualification of competitors (Hirata, 2022), on the other hand it was considered a market trend and a "prototype" opportunity for the companies of each segment to seek to integrate to diversify their area of activity (Diniz, 2022).
Another point highlighted by the market was the possibility of replicating the integrated concession as a business model (Hirata, 2022; Diniz, 2022) in other regions.

4.2 Business Model Replicability Analysis

Through the amendment given by Law 14.026/2020 to the legal framework of sanitation, the regionalized provision has become one of the premises of public sanitation services, "with a view to generating gains in scale and ensuring the universalization and technical and economic-financial viability of services".

With the new legal framework, regionalized provision has also become a condition for access to federal public resources and to funding from Union resources or resources managed or operated by Union bodies or entities. The fence therefore encompassed access to agreements and transfer contracts with recourse to the General Budget of the Union, in addition to funding provided by CAIXA and BNDES, which are historically the main financiers of the sanitation sector in the country (Pimentel & Miterhof, 2021).

According to the regulations given by Decree No. 10.588/2020 (Brazil, 2020c), for the purpose of allocating federal public resources and financing with Union resources, the requirement of regionalized service will be considered fulfilled:

I - in the case of a metropolitan region, urban agglomeration or micro-region, with the approval of the corresponding complementary law;
II - in the hypothesis of a regional unit of basic sanitation, with the formal declaration, signed by the Prefect, of adherence to the terms of governance established in the ordinary law; or
III - in the hypothesis of a reference block, with the signing of a cooperation agreement or with the approval of a public consortium by the federal entity (Brazil, 2020c).

The concession structured in an isolated way by the municipality of São Simão was not only affected by the restriction of access to federal resources because it was included in the list of exceptions provided for in Article 8 of Decree No. 10.588/2020 (Brazil, 2020c), considering it is an initiative in structuring by a federal financial institution, in the case of CAIXA, since 2018 and, therefore, before the date of publication of the Decree.

Thus, although it is a pilot project of the EFF with the intention of replicating it in other municipalities of the same size, the model adopted by São Simão, in isolation from other municipalities, because of the new legal framework of sanitation, can only be adopted by other isolated municipalities, provided that they have the consent of the regionalized structure in which they are inserted. If a non-regionalized municipality continues with a concession in isolation, the future concessionaire may face the restrictions of the Federal Law on access to funding, jeopardizing the economic and financial viability of the project.

Furthermore, the possibility remains for the integrated concession of the three public services to be used by the regionalized structures defined on the basis of the new legal framework for sanitation, as a further instrument to boost the generation of scale gains from these and the technical and economic-financial viability of the services.

5 CONCLUSION

In the debate on the approval of the new legal landmark for sanitation, much was discussed about the viability of attending to small municipalities, since it is considered that private enterprise would be interested only in contracts of the large urban centers.
The successful transfer of the São Simão project to the private sector demonstrated the market readiness for this business model, which integrated the traditional sectors of water supply and sanitary depletion with the solid waste sector to provide scale gain to the project of a small municipality, bearing the associated transaction costs.

The case study addressed in this article showed that, in São Simão, the integrated concession model, developed under the EFF CAIXA, with the support of the federal government, will have the capacity to make possible the achievement of the goals of the new legal landmark for sanitation for the three services, through a common concession and, therefore, without consideration or other support from the municipality.

The evaluation of the modicity of the tariff to be charged to the users for the three services showed that the tariffs obtained in the modeling of the concession will represent, in São Simão, an average commitment of 4.12% of the family income, thus proving to be adequate to the international references for spending on basic sanitation, besides being compatible with the values already practiced in the market.

The article identified that the tariff modicity and the economic-financial viability of the project were favored by the synergy between the three sectors of sanitation, mainly in the aspects related to the optimization of the administrative and managerial workforce involved in the execution and supervision of the concession contract, in addition to the sharing of expenses related to commercial management, collection and service to users.

From the point of view of replicability, considering the approval of the new legal framework for sanitation in 2020, this article concluded that the use of the integrated concession model by other municipalities in an isolated manner, as did São Simão, was hampered since the projects thus modeled would face restriction in access to credit under the approved legislation, since the regionalized benefit became a condition for access to federal resources.

However, the redirection of the sanitation policy towards regionalization occurred "with a view to generating gains in scale and to guaranteeing the universalization and the technical and economic-financial viability of the services" (Brazil, 2020a) and, therefore, with the same purpose intended by the integrated concession model developed in São Simão.

Therefore, this article concluded that, taking advantage of the existing synergy between the basic sanitation sectors, the integrated concession model tends to be another tool that can be used to leverage systemic gains in the regionalized structures formed from the new legal framework of sanitation, in that the provision of services by a single company optimizes administrative, managerial and commercial costs, contributing to the achievement of the technical and economic-financial viability of the universalization and provision of services.

The integrated concession of water supply, sanitary depletion and management of solid urban waste represents, therefore, an innovative business model, with the potential to boost the economic and financial sustainability of the universalization of basic sanitation in the country, whether in isolated municipalities, as was the case of São Simão/GO, or in regional units instituted according to the guideline of the new legal landmark of sanitation.

REFERENCES


Analysis of the Integrated Basic Sanitation Concession Model Adopted by the Municipality of São Simão, Goiás


