

SFD Report

São Paulo Brazil

Final Report

This SFD Report – Initial – was prepared by
GFA Consulting Group GmbH.

Data of production: 16/09/2018

Last update: 16/09/2018



SFD Report São Paulo, Brazil, 2018

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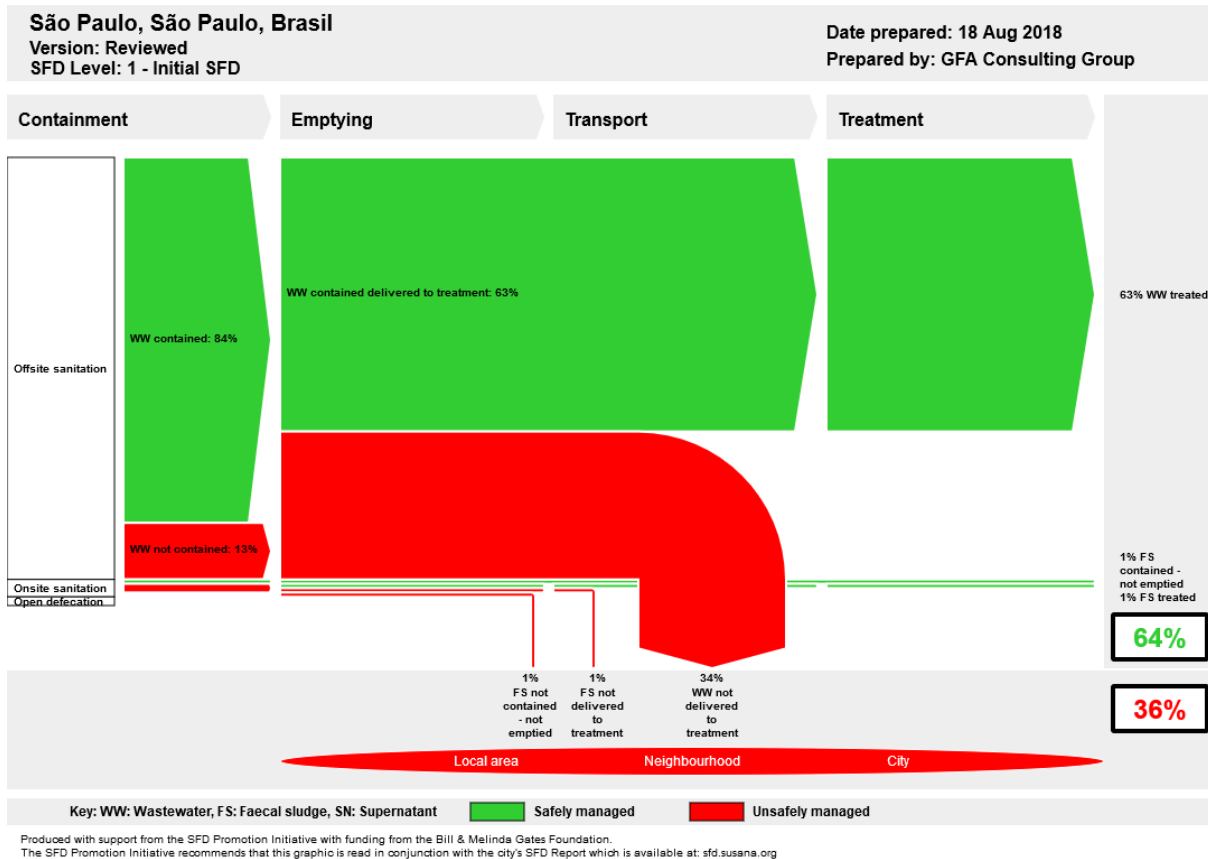
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1. The SFD Graphic



2. Diagram information

SFD Level:

This is an Initial level SFD report.

Produced by:

This SFD report was produced by GFA Consulting Group GmbH.

Status:

This is a final SFD report.

Date of production: 26/09/2018

3. General city information

The SFD graphic was constructed for the municipality of São Paulo, capital of the State of São Paulo integrated into the Metropolitan Region of São Paulo. It is the most populous municipality in the country and one of the largest in the world. According to the Brazilian Institute of Geography and Statistics (2018), the municipality had 11,967,825 residents in 2015.

The municipality has an area of 1,521 km², a population density of 7,398 inhab/km², with 99.1% of its population residing in urban areas and only 0.9% in rural areas. It is contiguously occupied by a dense urbanization that can be divided into central, urbanized and formal areas

and a peripheral area with the existence of predominantly informal or irregular cores or strips of flood prone valleys.

According to data from the Municipal Housing Secretariat, informal areas bring together about 20% of the population. Approximately 27% of the total population has a monthly income of up to half a minimum wage per person.

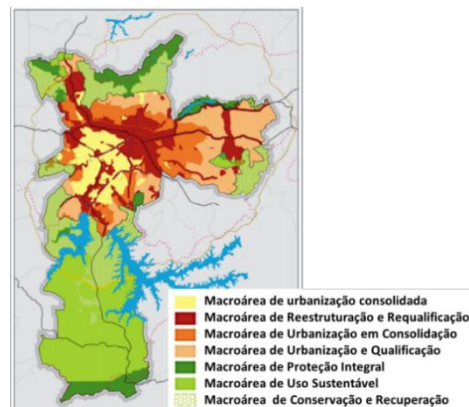


Fig. 1: Municipality of São Paulo Macro areas (Prefeitura Municipal de São Paulo, 2014a)

4. Service Outcomes

In the urban area of the municipality of São Paulo, the sanitation service is predominantly carried out by means of a collective solution, which is planned to cover this entire area in 2029, according to a contract with the company providing the services. However, analysing the indicators for 2015, only 84% of the population is connected to the available collecting networks. It is known that about 2% of the population has available collector networks, but are not connected and end up using solutions generally not suitable for the disposal of their sewage.

Of the sewage collected, only 75% arrives at one of the four treatment plants that integrate the system that serves the municipality. This is one of the greatest challenges in this region, due to the complexity of the urban layout and the mapping of existing infrastructures. In this way, a significant part of the population, although connected to collection networks still discharges its sewage directly into the waterways.

About 15% of the population does not have collection networks available on their street. This percentage includes populations residing in urban areas where the company's service has not yet advanced in these irregular areas, and where the service provider has difficulties to operate in rural areas. The main solutions identified in these cases were irregular connections in drainage systems; direct discharge of effluents into water bodies, especially in areas of irregular occupation over streams that cut the municipality; dumping into open pit ditches; or households that use on-site solutions, such as septic tanks and rudimentary septic tanks.

Septic tanks are considered as alternative individual solutions and are not part of the public service concept provided by the municipality. Although it is considered adequate and part of local solutions where the collective alternative is not feasible, the construction and operation of septic tanks are the homeowner's responsibility. This makes the information accuracy on emptying and transportation of the sludge from the pits difficult to measure.

As a result, the surface water resources that cross the municipality are compromised in terms of quality, which further compromises the water security of this river basin that has low indices of availability facing intense population density.

The underground water resources available in the area are not used as a source for supply through the distribution network. However, despite the low

availability of the São Paulo and Resende formations in the municipality, the use of wells is intense and occurs irregularly. Both aquifers are considered to be of low vulnerability to contamination by domestic waste due to their hydrogeological characteristics, but suffer from contamination from polluting industrial activities.

5. Service delivery context

According to the national guidelines for basic sanitation established by Law nº. 11,445/2007, the municipality of São Paulo is responsible for the provision, planning, regulation and supervision of sanitation services.

The provision of services was delegated to the *Companhia de Saneamento Básico do Estado de São Paulo* (Sabesp), which has been operating water supply and sewage services in the city of São Paulo since it was created in 1973. Sabesp, a mixed economy company, also operates in other 367 municipalities in the state.

The sewage system that serves the city of São Paulo integrates a system shared with other municipalities of the metropolitan region, mainly in the stages of interception and treatment of sewage.

To guide investments and actions in the municipality, Sabesp counts on its contractual obligations, regulated and supervised by the São Paulo State Sanitation and Energy Regulatory Agency (Arseps), and with the Municipal Sanitation Basic Plan, published in 2014.

Advances in the services provided are monitored and published by the National Sanitation Information System (SNIS), coordinated by the federal government through the Ministry of Cities.

The Municipality of São Paulo, together with the State of São Paulo, are responsible for defining solutions for the rural area, or macro area of urban containment and sustainable use and macro-area for the preservation of natural ecosystems. In addition, the municipality is still responsible for land regulation actions, in order to include all urban area residents in the collective sewage services.

Considering that sanitation is politically inter-sectoral, it is important to point out that there are still direct impacts of policies regarding water resources, land use and occupation, environment, health, among others, on activities related to the sanitation chain services.

6. Overview of stakeholders

We present a brief description of the main

stakeholders involved in the solutions for sanitary sewage adopted by the population of the municipality of São Paulo (Tab.1).

Key stakeholders	Institutions/Organizations
Public Institutions	Ministry of Cities, Ministry of Environment, Department of Water and Electric Power of the State of São Paulo, São Paulo Municipality, Sabesp.
Non-Governmental Organizations	Community and residents' associations, Instituto Trata Brasil
Private Sector	Residual Transportation Companies (sludge)
Regulatory and supervisory bodies	São Paulo State Water and Sanitation Regulatory Agency (Arsesp), Environmental Company of the State of São Paulo (Cetesb)
Others	Upper Tietê River Basin Committee

Tab.1: Key stakeholders

7. Process of SFD development

The application of the SFD methodology was shown to be innovative for the integral analysis of the solutions adopted by the population for the destination of their sewage. This is because the information systems available in Brazil generally present limitations stemming from the different scales and formats of data collection. Using the SFD methodology, it was possible to cross-check the available information for an integral sketch of the municipality. In this sense, the main limitations were related to the reference year of each available information and the different calculation methodologies of the indicators, especially those that estimate the percentage of the population served by the different solutions.

Another limitation was the approximation between concepts and definitions available in the information systems to the definitions of SFD methodology technologies, as was the case of the concept of “fossa rudimentaria”. In this case, the concept described in the Brazilian statistics is very comprehensive for the SFD methodology, which allows several classifications for *onsite* solutions, according to helpful available technology definitions in the manual.

However, in order to meet the level of detail proposed by the SFD methodology, it would be necessary to carry out primary research in the locations, a possibly challenging action for large municipalities such as São Paulo.

8. Credibility of data

In order to define analysis variables and their subsequent quantification, it was necessary to critically adopt various information systems and databases on basic sanitation available in the country, since some do not have up-to-date information and each one is designed according to its own logic. Thus, these provide information on different dimensions.

In general, the information available on sanitation services in São Paulo comes from three main sources: the Basic Sanitation Information System (SNIS) coordinated by the Ministry of Cities, the Census of the Brazilian Institute of Geography and Statistics and the Atlas of Sewage, published by the National Water Agency.

In addition, the official Sabesp document, *Plano de Metas para o Município de São Paulo/Abastecimento de Água e Esgotamento Sanitário – 1ª revisão quadrienal*, which is part of the service contract with the municipality, was used.

9. List of data sources

- Atlas Esgotos: despoluição de bacias hidrográficas (ANA, 2017)
- Censo 2010 (IBGE)
- Sistema Nacional de Informações sobre Saneamento (SNIS)
- Plano de Metas para o Município de São Paulo/Abastecimento de Água e Esgotamento Sanitário – 1ª revisão quadrienal (Sabesp, 2014)



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