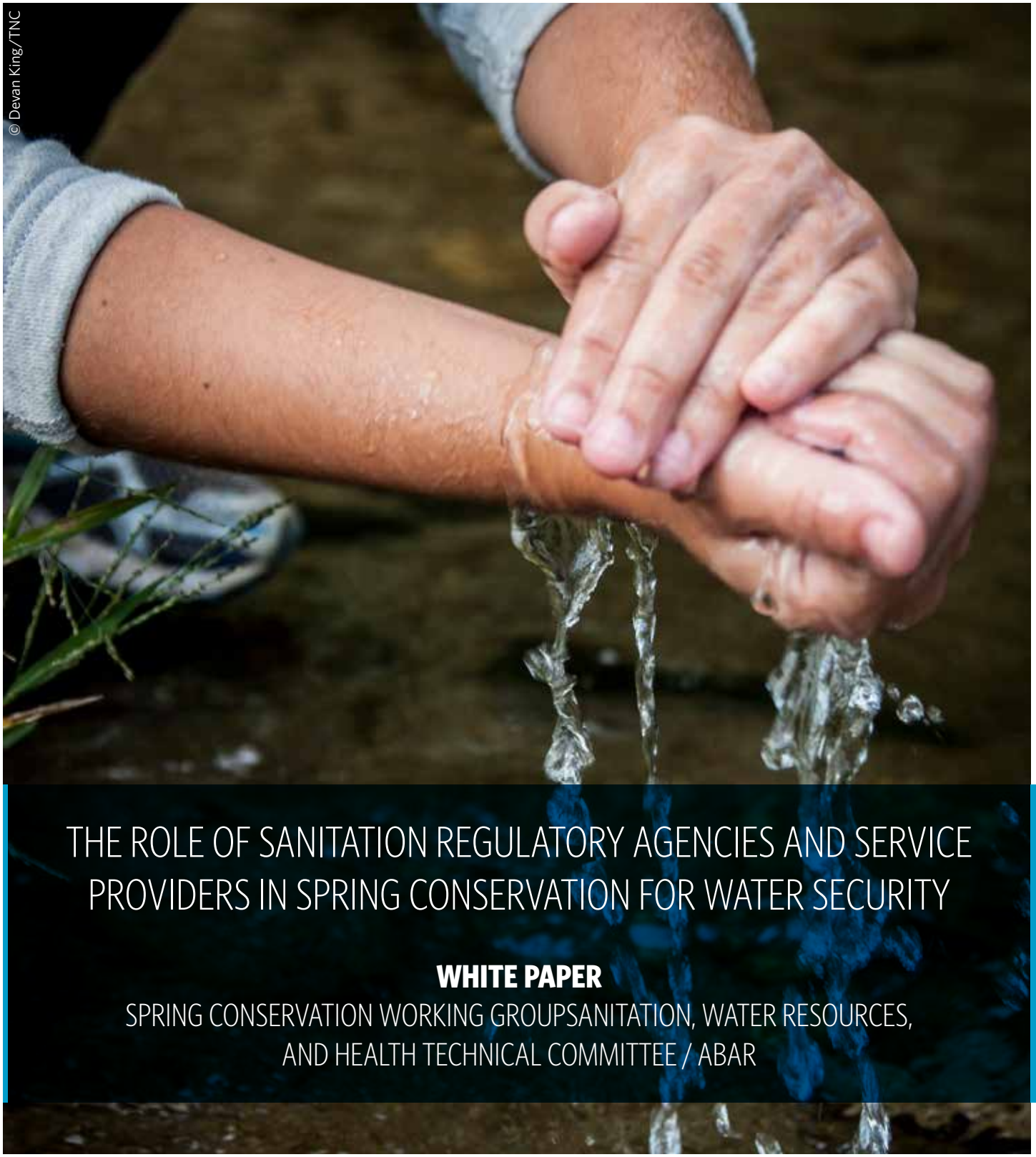



# THE ROLE OF SANITATION REGULATORY AGENCIES AND SERVICE PROVIDERS IN SPRING CONSERVATION FOR WATER SECURITY

**WHITE PAPER**

SPRING CONSERVATION WORKING GROUPSANITATION, WATER RESOURCES, AND HEALTH TECHNICAL COMMITTEE / ABAR

LATIN AMERICAN WATER FUNDS PARTNERSHIP

The Nature Conservancy

FUNDACIÓN FEMSA

IDB Inter-American Development Bank

gef

Supported by:

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

based on a decision of the German Bundestag

Produced by:

arsesp agência reguladora de serviços públicos do estado de São Paulo

ABAR ASSOCIAÇÃO BRASILEIRA DE AGÊNCIAS DE REGULAÇÃO

Aresc Agência de Regulação de Serviços Públicos de Santa Catarina

# The role of sanitation regulatory agencies and service providers in spring conservation for water security


This document discusses the conceptual and legal aspects of the role of the sanitation sector in spring protection. Designed under the Brazilian legal framework, its purpose is to serve as a benchmark for other countries willing to promote the sanitation sector leadership to protect their source waters.

Supplying drinking water involves primarily obtaining water from a body such as a river, lake, reservoir, or groundwater source. Therefore, it depends essentially on the quality of the source. The arguments presented here aim to promote long-term water security and support the investment of water utilities in conserving water sources via funds from water tariffs.

While basic sanitation is a state policy, its operation is run as a public service – either directly by municipal autarchies, state companies, or through concessions to the private sector – and thus, subject to state regulation. For a water utility, therefore, quality water in adequate amounts in the long term is essential from a business perspective. By enabling the investment of financial resources in watershed protection, the sanitation sector regulation allows the direct action of water utilities for their own benefit. The objective of this document is to support the debate on incorporating nature-based solutions into sanitation sector practices.

In public policies, basic sanitation, water resources, public health, and the environment are intrinsically interrelated themes. Although addressed by different laws, those issues are interconnected. Therefore, to guarantee the improvement of the quality and quantity of water available to all beneficiaries of protected and well-managed waters sources, especially water utilities, it is best to implement policies and other initiatives in an integrated manner to increase water security.

# WATER SECURITY

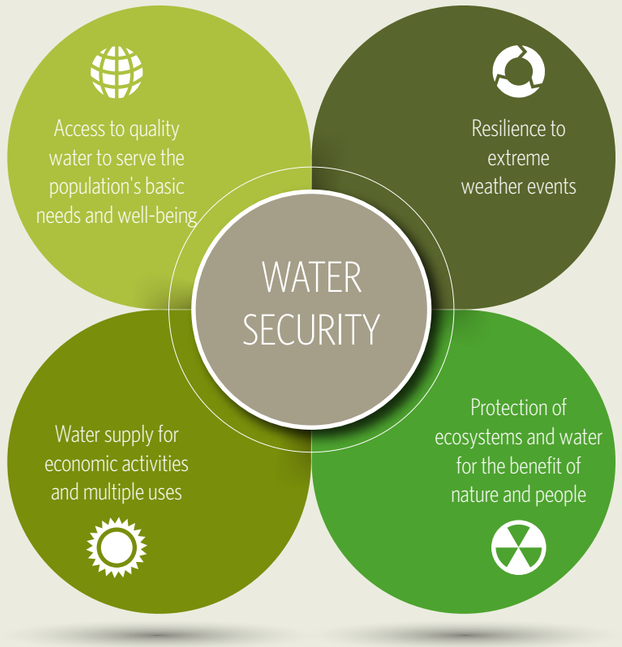
© Robert Clark





According to the United Nations, water security exists when quality water is available in adequate quantity to serve human needs, allow economic activities, and conserve aquatic ecosystems. Four dimensions should be considered as a guide for planning the supply and use of water in a country.

## The Four Dimensions of Water Security




Among the seventeen sustainable development goals (SDGs) established in the "2030 Agenda," Goal 6, which seeks to ensure the availability and sustainable management of water and sanitation for all, stands out. SDG 6 sets targets to ensure availability and sustainable management of water and sanitation for all, implement integrated water resources management at all levels and protect and restore water-related ecosystems.

In another field, the World Economic Forum's global risk reports have repeatedly included the water crisis among the top five risks to the global economy. That forum of economic-field experts classifies risks associated with water as highly probable and with high impact. That includes extreme weather events, natural disasters, failure to adapt to and mitigate climate change, and ecosystem collapse, among others.

*The sanitation sector's role in protecting, conserving, and recovering water sources emerges as the demand for water security, climate change adaptation, and mitigation increases.*

Those risk alerts are also valid for Brazil. In different regions of the country, opposing events of droughts, scarcity, and intense and more frequent rains have been registered in short periods. That is the case in the southeastern region, which drives the national industrial, commercial, and services economy. However, most large Brazilian cities already deal with extreme weather events, directly or indirectly associated with the impacts arising from the change in land use in watershed areas, with severe effects on the economy and the quality of life of millions of people. With the extreme weather scenario being the most likely trend for the coming years, cities need to adapt as soon as possible to mitigate adverse effects on the economy and the population and increase their resilience.


© Andre Targa Cavassani

## Concept of Water Source

Considering the sanitation sector's role in ensuring water security, the concept of water source hereby adopted refers to ***"the territory from which either surface or groundwater is used for public supply."***

## The Economic Viability of the Business of Water Supply

The public water supply service is an economic activity with particular social relevance and differs from other economic activities because it is essential to the community. Its operation is run as a public service – either directly by municipal autarchies, state companies, or through concessions to the private sector, with the municipality as the granting power.

Water supply is subject to regulation by the state through the public services regulatory agencies that monitor the quality of the service provided, the fairness of tariffs, and the adequate and just remuneration for the services offered.

**Considering the water-risk scenario and the need for water security, the sanitation sector needs to protect the supply of its raw material, focusing on:**

1. **The population's water security; and**
2. **The financial sustainability of its own business**

Quality water in adequate quantity is a sine qua non condition to ensure the long-term sustainability of both. Therefore, being actively concerned with the state of the source is in the interest of any sector that uses water resources, especially water supply service providers.

## Universal Access

Universal access to water is a principle established in Brazilian legislation and international political frameworks, such as the SDGs. It means the progressive expansion of access to basic sanitation for all households and businesses.

The existence of well-preserved springs capable of providing enough water and guaranteeing its delivery to the population is essential for water supply businesses. Therefore, to reach the goal of universal access, it is imperative that water utilities invest in protecting their water sources. Naturally, such investments need to be incorporated into the water sector operations and thus, be considered when structuring the water tariff composition.

## Water Tariff as a Funding Source

Making the necessary investments to protect water sources is inherent to the sanitation activity and, therefore, must be properly accounted for within the water tariff composition. Other sources of financing already exist for the conservation of water sources, so the sanitation sector can combine their investments with other beneficiaries, whether public or private.

*Access implies not only the physical infrastructure itself but ultimately the provision of safe water on a permanent basis.*

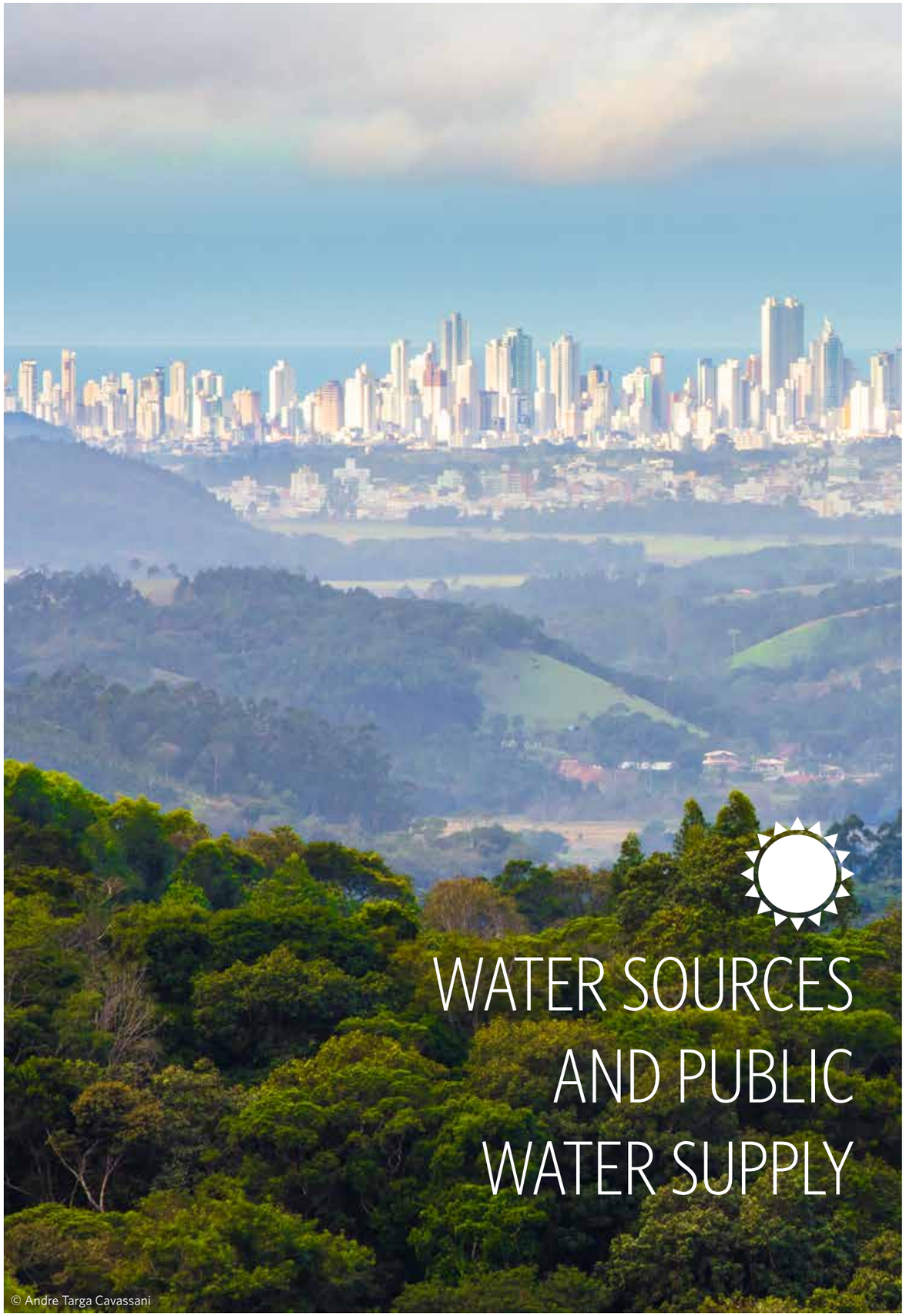
## Nature-Based Solutions

**Actions to protect, sustainably manage, and restore natural and modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits .**

To achieve objectives such as improving and expanding water uptake, storage, and distribution systems, investments in conventional infrastructure are generally used. However, it increasingly makes sense to adopt solutions based on natural resources as complementary actions to those efforts.

Environmental services resulting from functional ecosystems are diverse. But considering hydrological components alone, increased water retention time in the watershed, the recharge of aquifers, sedimentation abatement, and an increase in the lifespan of reservoirs can be expected.

In addition to the protection and restoration of natural environments, best management practices in production areas and adequate management of rural roads contribute to results not offered by conventional infrastructure and imply the integration of policies and other initiatives. Once the water source is well managed, the risks of droughts or floods are lower, making cities more resilient.



# WATER SOURCES AND PUBLIC WATER SUPPLY

© Andre Targa Cavassani

Municipalities Use Springs and its Waters as Sources for Public Supply.

The legal nature of springs is that of a public good, regardless of who explores them and even who builds them, as in the case of reservoirs or catchments infrastructure for public supply. The common good nature of water, including springs, has the tutelage of the state as an essential characteristic.

Some municipalities and water utilities may have a specific interest in protecting those territories and their bodies of water. That interest resides in the right of use and its protection, aiming to improve the necessary flows with adequate quality in the long term.

The Brazilian Health Ministry defines water supply systems as being composed of spring, catchment, adduction, treatment, reservoir, distribution network, building connections, plus lift stations." Law No. 11.445/2007 established the National Sanitation Policy. It was recently revised and updated through Law No. 14.026/2020, which introduced the reservation of raw water among the activities that compose water supply systems.

*Water supply services depend on a body of water in which it is possible to collect quality water in adequate quantity for treatment and public supply, making it a source*

The reservation of raw water takes place in bodies of water whose drainage is eventually accumulated in dams to regulate the flow as well as in the portion of the watershed that contains the water source. If well managed, such bodies of water, and their surrounding lands, can become appropriate water sources for public supply and suitable for water uptake by a particular water utility.

Consequently, the recent national sanitation legal framework update creates a closer relationship between the sanitation sector and the protection of source waters that water utilities use in their business.

# LEGAL FRAMEWORK AND THE INTEGRATION BETWEEN POLICIES



The Brazilian legal framework incorporates the concept of water security in the various constitutional, legal, and infra-legal norms. And specifically, it recognizes the role of the sanitation sector in protecting water sources and carrying out the necessary investments to ensure water security and incorporate them into the water tariff composition.

Environment, public health, water resources management, and sanitation are intrinsically related themes. Although they are established by different laws, enacted in different periods, with specific principles, guidelines and objectives, instruments, and management systems, it is important to avoid the mistaken impression that these themes are independent or unrelated.

To guarantee the quality and availability of water for public supply, all related policies must be implemented in an integrated manner.

The foundation of the chapter on Economic Order in the Brazilian Constitution of 1988 is the appreciation of human labor and free enterprise. That chapter also establishes the protection of the environment as a grounding principle.

The environment is also the object of constitutional protection as a common good for the people and essential to a healthy quality of life, and "the government and the community have a duty to defend and preserve it for present and future generations" (art. 225, caput, CF).

The Constitution defines legislative and administrative powers for the federation's entities. It established the attribution of instituting guidelines for "urban development, including housing, basic sanitation, and urban transport" to the Union (art. 21, XX).

Law No. 11.445/2007, which was recently updated by Law No. 14.026/2020, is the normative framework that regulated that constitutional provision, establishing the National Guidelines for Basic Sanitation and its policies in Brazil.

The bodies of water that form springs are under the domain of the Union, or the states, and are governed by Law No. 9433/1997 and by state laws. Specific rules on drinking-water standards with a view to public health also apply to water sources. Finally, like any body of water, they are also considered environmental resources, governed by Law No. 6.938/1981.

Although the competence to create nationwide standards on basic sanitation and water resources belongs to the Union, all states are competent to take the necessary measures regarding the implementation of sanitation services, health, and environmental protection, including the springs used for public supply.

In the municipalities, other public policies in the Constitution are also connected with protecting water sources and basic sanitation services. Two competencies that directly impact the environment and water sources stand out: the " land-use planning, through procedures and control of the use, subdivision, and occupation of urban land" (art. 30, VIII) and the urban development policy, which aims to "plan the full development of the city's social functions and ensure the well-being of its inhabitants" (art. 182). The latter relates to access to sanitation services and the protection of areas of environmental interest for sanitation, including springs.

According to the City Statute, Law nº 10.275/2001, the urban policy aims to plan the full development of the social functions of the city and urban property through the "guarantee to the right to sustainable cities, understood as the right to urban land, housing, environmental sanitation, urban infrastructure, transport, and public services, and work and leisure for present and future generations" (art. 2, I), among others.

The National Environmental Policy or Law nº 6.938/1981 established as principles: the maintenance of the ecological balance, considering the environment as a "public heritage to be necessarily ensured and protected," with a view to collective use (art. 2, I); planning and inspection of the use of environmental resources (art. 2, III); the protection of areas threatened with degradation (art. 2, IX) and the recovery of already degraded areas (art. 2, VIII), in addition to the ongoing monitoring of environmental quality (art. 2, VII).

The same protection is clearly stated in the objectives of Law No. 9,433/1997 of the National Water Resources Policy concerning the rational and integrated use of water resources, regarding sustainable development (art. 2, II); and to ensure the necessary availability of water

for current and future generations, in quality standards suitable for their respective uses (art. 2, I). Such protection is essential, considering that water is a limited natural resource (art. 1o) under the public domain and must be available to provide multiple uses (art. 1, IV). In scarcity, use for human and animal consumption is prioritized (art. 1, III).

The National Council for the Environment (CONAMA) Resolution 357/2005 observes the intrinsic relationship with environmental legislation, which provides the environmental guidelines for classifying bodies of water. Art. 4 establishes that the fresh waters destined for human consumption, with different types of disinfection and treatment, belong to Special Classes 1, 2, and 3. Class 4 water is intended for navigation and landscape harmony only, making its uptake prohibited for public supply. That is also the case for CONAMA Resolution No. 396/2008, which provides similar classifications for groundwater.

That means that environmental legislation interferes with basic sanitation services, indicating the level of quality required in bodies of water for human consumption and the respective treatment for each class. In case the water quality from a supply source does not meet the standards of a class that allows collection, uptake for supply is vetoed, as it is considered unsafe. In other words, the body of water cannot serve as a source.

While the management of water resources is the responsibility of the holders of its domain – states or the Union, together with the collegiate bodies – councils and committees–, is attributed to municipalities, which hold the granting power on sanitation services. Such institutional relationship presupposes that a technical and institutional collaboration is necessary between all the actors involved, with permanent and systematic governance.

©Paulo Petry/TNC

*Drinking water supply services are totally dependent on springs. If those bodies of water lose their environmental balance, as is the case during periods of drought, sedimentation or pollution, the use of the water for greater ends, such as supply to people becomes compromised.*

Finally, Law No. 11.445/2007, which establishes the national guidelines for basic sanitation, is the general rule in force for the entire national territory and sets the concepts, fundamental principles, practices for the exercise of ownership and regionalized provision sanitation public services, as well as for the planning guidelines. It also regulates the economic, social, and technical aspects of services, collegiate bodies' participation in social control, as well as the federal basic sanitation policy guidelines.

That law established thirteen fundamental principles that form the basis for providing services. Among them, universal access and adequate service provision stand out (art. 2, I). In the scope of public services, universal access stands for the "obligation to ensure access to quality essential services at an affordable price to all." Universal access progressively expands access to basic sanitation to all occupied households (art. 3rd, III). The existence of springs capable of ensuring a steady supply of water to the supply systems is essential for that to take place.

Decree No. 7,217/2010, as the regulating piece of the National Guidelines for Basic Sanitation Law, stipulates that public basic sanitation services will be provided in conjunction with other policies such as urban and regional development, housing, poverty eradication, environmental protection, water resources, health promotion, and others of relevant social interest aimed at improving the quality of life, for which basic sanitation is a determining factor (art. 2, VI, Law No. 11.445 /2007 and Article 3, VI, Decree No. 7.217/2010).

The items above directly relate to the protection of water sources because they refer to the same natural resource–water–and link basic sanitation services with urban and regional development, housing, and environmental protection policies.

# THE ROLE OF SANITATION REGULATION

*By providing that the protection of water sources is included among the activities of the sanitation sector, regulatory agencies and water supply service providers not only ensure the economic viability of the sanitation business since water is the sector's raw material, but also water security in its broadest definition.*





The regulation objectives are stated in art. 22 of Law 11.445/2007 and in art. 27 of Decree No. 7.217/2010 that form the new legal sanitation framework range between regulation and inspection activities, as follows:

- Establish standards and norms for the adequate provision of services to users' satisfaction, observing the reference norms published by the National Water Agency (ANA);
- Ensure compliance with targets established in the service provision contracts and at the Municipal Basic Sanitation Plans;
- Prevent and suppress the abuse of economic power;
- Define tariffs that ensure both the economic-financial balance of the contracts and the fairness of tariffs through mechanisms that generate well-organized and effective services and allow the sharing of productivity gains with users.

The regulation establishes specific norms to guarantee that services are adequate to the local needs, holding universal access as a fundamental principle of basic sanitation.

As holders of basic sanitation services, municipalities need to define the regulatory body to look after the regulation, inspection, and respective procedures (Law no. 11.445/2007, art. 9, II). In the Brazilian model, an autonomous entity exercises such oversight (arts. 8, 11, item III, and art. 21), a regulatory agency with independent decision-making power, including administrative, budgetary, and financial autonomy.

The inclusion of the principle of efficiency in the Constitution sets a new duty for public agents, "carry out their duties with functional swiftness and perfection " to meet society's aspirations and needs. The concept of efficiency in providing public basic sanitation services also extends to public health and environmental protection, especially of water resources.

Regulatory agencies seek to ensure that sanitation services are provided efficiently within their legal powers, which means that they can guarantee the improvement of both sanitary and environmental conditions. That role also has an important economic-financial aspect concerning the definition of tariffs related to services.

As regulation has decision-making independence, regulatory norms are mandatory and binding on service providers. Therefore, the Regulatory Agency may authorize the service provider to invest in water source protection at the tariff review, incorporating them into the water tariff composition.

At some Regulatory Agencies, incorporating water source protection to service providers' tariff composition is already taking place. At the time of the writing of this document, the Public Services Regulatory Agency of Santa Catarina State (ARESC), the Water Supply and Sewage Regulatory Agency of Minas Gerais State (ARSAE/MG), and the Regulatory Agency for Water, Energy, and Basic Sanitation of the Federal District (ADASA/DF) had already incorporated such mechanism into their water tariff composition. The Sanitation and Energy Regulatory Agency of São Paulo State (ARSESP) follows the same planning process.

From the regulation viewpoint, it is essential to consider the integration and interrelatedness of sanitation, water resources, the environment, and even health issues, although different standards govern such matters. The terms "collaboration" and "integration" mentioned in the various legal provisions highlight the opportunity and demand for public services providers to exert governance between other actions and activities related to public policies.

# WHAT CONSTITUTES SPRING PROTECTION

© Devan King/TNC

Considering the successful experiences in Brazil and other countries, it is worth defining what constitutes spring protection and conservation actions.

The actions hereby considered refer to the conservation and preservation of bodies of water, the restoration of natural environments with the maintenance of vegetation cover on the riverbanks and hillsides, restoration of degraded areas such as springs and aquifer recharge areas, the protection of standing native forests/ natural ecosystem remnants, the use of best management practices in agriculture and cattle raising areas, and conservation of rural roads, among others.

Brazilian geographic diversity makes it impossible to define one single method for carrying out the actions needed to protect water sources. Each case requires establishing adequate and efficient steps to protect or recover the source(s) according to the situation of the body of water at hand.

The feasibility of investments in watershed protection must be subjected to technical analysis. Limitations may exist both on the viability of nature-based solutions themselves – some springs may respond better than others – and on the economic capability when the user base or payment capacity is reduced.

*The term "nature-based solutions" has been used to refer to those activities, which have ecosystem functionality and the resulting environmental services in their essence.*


© Devan King/TNC

Therefore, technical feasibility studies are the starting point for any initiatives aimed at protecting water sources. Information from Municipal Basic Sanitation Plans and from Watershed Plans, when available, can be useful to support decision-making by water resources' users. When studies are not available or insufficient to meet the need of decision-makers, including the supply service provider, the latter may conduct specific feasibility studies on the source in question. The water tariffs can finance those studies.

# SPRING PROTECTION LEADERSHIP OPPORTUNITY

© Felipe Fittipaldi

© Devan King/TNC

*In comparison to the existing bulk-water user charge, which applies to large water users and has watershed-wide application, deploying funds from water tariffs has a local and specific purpose: improving the availability and quality of water collected locally, which impacts the sanitation sector's sustainability and the water security for a given population*

By investing in the protection of source waters, water utilities take the lead in conducting direct actions to guarantee the quantity and quality of its raw material in the long term.

Ideally, public policies should appropriately meet the demands of land and water management, public health, and other areas. However, there is much room for improving public policies in Brazil.

Sanitation's direct action in protecting water sources does not exclude nor overlap with other initiatives. Instead, it is complementary, given the expressive amounts of investment needed to guarantee water sustainability.

Investments in protecting water sources are an integral part of the sanitation business, especially water supply. Conceptually, the water tariff is the compensation for the operational cost involved in the service provision. Therefore, water source protection needs to be covered and included in the composition of the water tariff to guarantee a public service.

Water tariff funds shall not be confused with, nor overlap, the existing bulk-water use charge. The latter is one of the National Water Resources Management Policy instruments established by Law 9 .433/1997 and is bound to the Watershed Plan approved by the river basin committee. Conceptually, the bulk-water user charge is a public price paid by users for the private use of a natural resource. Protecting a given water supplying territory only applies if specifically stated in the Watershed Plan and if resources are available.

Therefore, sanitation regulation and the water utilities have an active role in protecting their water sources, mainly because it is an economic activity with a social impact. Consequently, it is their responsibility to guarantee drinking water for the population.

# CONCLUSIONS AND RECOMMENDATIONS

The water security of large cities depends on long-term planning and investments. The protection of water sources must be mainstreamed as one of the essential steps to guarantee the supply of drinking water and the resilience of cities.

Raw material availability protects public water supply service providers from operational, financial, and reputational risks.

The long-term nature of return on investments in nature-based solutions implies the progressive recovery of the expected ecosystem functions that, in turn, deliver hydrological results, demand a scaled and steady allocation of resources over time.

While the sanitation sector is in a position to take the lead, its efforts complement other policies and funding sources. Therefore, a technical and institutional collaboration between all stakeholders in a permanent and systematic governance setting is desirable.

The water tariff is the natural and direct financial mechanism for water utilities to mobilize the necessary funds for water source protection – either as a direct source of investment by providers or in the form of a guarantee for financing operations to the sector.





This document is a product of the Working Group on Water Source Conservation coordinated by Luíza Kaschny Borges Burgardt[a] and Alessandro Silva de Oliveira[b] as part of the Technical Chamber of Sanitation, Water Resources and Health of the Brazilian Association of Regulatory Agencies (ABAR).
It is co-authored by Claudio Klemz[c], Samuel Roiphe Barreto[d] and by the consultancy of M. Granziera Consultoria Ltda.
It is funded by the Latin American Water Funds Partnership, a joint initiative of TNC, FEMSA Foundation, IDB, GEF, and the International Climate Protection Initiative (IKI). The views expressed in this White Paper are those of the authors and do not necessarily reflect the views of the IKI, BMU, or IDB, their Board of Directors, or the countries they represent.

a. Inspection Manager at the Public Services Regulatory Agency of Santa Catarina - ARESC
b. Methods, Controls, and Data Manager - ARSESP
c. Water Public Policy Specialist at The Nature Conservancy
d. National Water Manager at The Nature Conservancy

Produced by:

The Nature Conservancy Brasil
Aresc – Agência de Regulação de Serviços Públicos de Santa Catarina
ABAR – Associação Brasileira de Agências de Regulação
arsesp – agência reguladora de serviços públicos do estado de São Paulo
Coalizão Cidades pela água

Supported by:

Latin American Water Funds Partnership
The Nature Conservancy
Fundación FEMSA
IDB – Inter-American Development Bank
gef
Supported by: Federal Ministry for the Environment, Nature Conservation and Nuclear Safety – based on a decision of the German Bundestag
Partnerships for Forests
GREAT for PARTNERSHIP – Britain & Northern Ireland