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The Human Rights to Water and Sanitation in Policy Responses to the COVID-19 Pandemic: An Analysis of Brazilian States

Davi Madureira Victral ^{1,*}  and Léo Heller ² 

¹ Department of Sanitary and Environmental Engineering, Federal University of Minas Gerais, Av. Antonio Carlos 6627, Belo Horizonte, MG 31270-901, Brazil

² René Rachou Institute, Oswaldo Cruz Foundation, Av. Augusto de Lima, 1715, Belo Horizonte, MG 30190-002, Brazil; leo.heller@fiocruz.br

* Correspondence: davi.victral@live.com; Tel.: +55-318885-3992

Abstract: The outbreak of the new coronavirus disease (COVID-19) led to an unprecedented number of policy responses from public institutions involved in the health and economic sectors. Nonetheless, the water, sanitation, and hygiene (WASH) sector remained in the background of this decision-making arena. The objective of the study presented herein was to observe and discuss political responses to the new coronavirus pandemic in the context of WASH during the first 40 days of the outbreak, using as cases the five Brazilian states most affected by the pandemic. We addressed this issue with a quali-quantitative exploratory study using content analysis to discuss the direction (for whom and how?) of those policy responses, through the framework of the human rights to water and sanitation. The paper also introduces a timeline to map the reactivity and proactivity of the studied institutions. We identified two major priorities in policy responses to the coronavirus pandemic: population protection and financial and economic sustainability of service providers. In regard to population protection, the findings show that it often did not contemplate all of the population, and that equality and non-discriminations were partially ignored in the laws and regulations. In addition, institutions more attached to service providers were more committed to the provider's economic and financial sustainability than to measures to directly protect the population.



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Keywords: coronavirus; WASH; public policies; policy responses; population protection; human rights to water and sanitation; equality; non-discrimination

1. Introduction

“So what? What do you want me to do?” responded the Brazilian President Jair Bolsonaro when asked by journalists about the rapidly increasing number of the new coronavirus disease (COVID-19) cases [1]. Despite the efforts of Bolsonaro in denying the near unprecedented impact of the novel coronavirus pandemic, diverse policy responses were adopted by Brazilian governmental institutions [2].

In Brazil, the first COVID-19 case was confirmed on 26 February 2020, and by 5 August 2020, 2.8 million confirmed cases had been reported [2]. By the time of the drafting of this paper, Brazil was the second-ranked country in numbers of confirmed cases and deaths by COVID-19. In February 2020, the COVID-19 outbreak was declared a Public Health Emergency of National Concern (PHENC) by the Brazilian Ministry of Health [3]. Since then, the Brazilian Federal Government has issued 53 policy responses as of 1 May 2020 (e.g., laws, decrees, provisional measures) [4]. Those responses were aimed at guiding the actions of Federal, State, and Municipal institutions.

The impact of this novel pandemic on the population, and the Federal Government policy responses framework, motivated and guided diverse policy responses from Brazilian State governors and city mayors. Following the Federal Government framework, the first set of responses were focused on community containment measures, as recommended by the World Health Organization (WHO) [1,4–6], including isolation, quarantine, social

distancing, and infection prevention and control (IPC)—including regular hand hygiene with clean water and soap [7]. However, the success of those policies directly relies on the availability of adequate services at the household and public levels, including safe water, sanitation, and hygiene in homes, public spaces, institutions, and work environments.

For a large number of households, ensuring sufficient water and soap to maintain adequate hygiene is practically impossible [7]. As shown by the WHO figures, two out of five people in the world do not have a handwashing facility with soap and safe water on the premises [8]. Preventing or containing this pandemic requires increased water availability in homes for personal hygiene and for institutions such as health care facilities [9]. The neglect of this factor by policymakers poses a risk of increasing the vulnerability of people who already face precarious housing, water, sanitation, and health care conditions.

In Latin America and the Caribbean, 95% of the population used an improved drinking water source in 2015 [8]. Whilst piped water on premises was over 80% nationally in Brazil, coverage was much lower in several regions especially North and Northeast regions [8]. Amazonas State, for example, located at the North region had 62% of piped water on premises coverage, and Maranhão State in Northeast had 64% [8]. Adequate hand hygiene requires a handwashing facility and sufficient water from reliable and easily accessible sources. Unreliable and unsafe water supplies can be associated with poorer hygiene, which may increase the spread of COVID-19 [7].

According to the WHO [6], the provision of safe water, sanitation, and hygienic conditions is essential to protecting human health during all public health emergencies. The provision of these services must consider equality and non-discrimination as basic principles in order for States and policymakers not to violate human rights. It is critical that the policy responses to the new coronavirus epidemic recognize and adopt the needs of the water, sanitation, and hygiene sector (WASH).

A group of UN independent human right experts in March 2020 called on water service providers to ensure water free of cost to certain population groups and to stop water cuts to those who cannot pay the bills for the duration of the new coronavirus crisis, and also called the States to enforce public and private service providers to comply with these measures [10]. This trade-off between the protection of access to proper water and sanitation services for those most in need and the economic sustainability of the service provision needs to be carefully managed, taking into account the prioritization of the former criterion.

The water and sanitation sector is expected to respond to and to deliver services to all population groups, including those that are in hard-to-serve areas such as informal settlements, people in homelessness situation, and rural areas. The denial of access on the grounds of economic, social, or housing conditions is a discrimination and can lead to human rights violations [11,12]. States require strong, sustainable, resilient water and sanitation systems to save lives and prevent the public health system from being overwhelmed or collapsing. Thus, it is important to improve institutions and set a robust legal and regulatory framework for the water and sanitation sector that include the principles of equality and non-discrimination.

The human rights to water and sanitation (HRWS), recognized by the UN General Assembly and by the Human Rights Council in July 2010 [12], provides a guiding foundation based on equality and non-discrimination [11] for the delivery of water and sanitation as a utility. As a result, States are responsible and legally accountable [13] to use the maximum resources available to ensure that these services meet the human rights principles and standards [14]—availability, accessibility, affordability, acceptability and safety—of the normative content of economic, social, and cultural rights.

This study aims to assess the temporality and content of political responses from the Brazilian states most affected by cases of COVID-19 in the context of water, sanitation, and hygiene (WASH) during the pandemic, using the framework of the HRWS. Two questions guided the research: (i) how was the temporality of the institutional response of the Brazilian states to the new coronavirus pandemic in the context of WASH? and (ii) what was

the focus of the policy responses from public institutions to the new coronavirus pandemic in the context of WASH? To answer these questions, this article is organized as follows: First, a short description of the context is presented. Second, methods are described together with an explanation regarding the data collected. Third, results are presented in two different forms: timelines for each state, to better illustrate the temporality of the policy responses, and a content analysis of the documents, focused on a better understanding of the direction and the people impacted by the measures. Finally, conclusions are summarized and recommendations provided.

2. Materials and Methods

This study followed a qualitative and quantitative exploratory approach with data from a period of 40 days collected from the official Brazilian Ministry of Health website [15], and inventories of policies and regulations from five Brazilian states—Amazonas, Amapá, Ceará, Maranhão, and Roraima—collected from official journals from each state.

2.1. Case Selection

The criteria for selecting the five studied states were the number of confirmed cases per 100,000 inhabitants in the first 40 days of the new coronavirus pandemic. The numbers were collected from the Brazilian Ministry of Health website [15] (Table 1). Day 0 represents the first notification of contamination by the new coronavirus in each state, officially reported to the Brazilian Ministry of Health.

Table 1. Number of confirmed cases per 100,000 inhabitants in the first 40 days of the coronavirus pandemic in the 5 most affected states in Brazil. Source: adapted from data collected from the Brazilian Ministry of Health website [15].

State	Day 0	Day 40	Confirmed Cases	Population (2019)	Confirmed Cases/100,000 Inhab
Amapá	20/03/2020	29/04/2020	918	845,731	108.55
Roraima	22/03/2020	30/04/2020	519	605,761	85.68
Amazonas	15/03/2020	24/04/2020	2888	4,144,597	69.68
Ceará	17/03/2020	26/04/2020	5421	9,132,078	59.36
Maranhão	21/03/2020	30/04/2020	2804	7,075,181	39.63

An exploratory screening was carried out with the website databases of the three representative powers of the five Brazilian states—executive, legislative, and judicial—intended to select the institutions to be evaluated. The objective of this first scan was to observe institutional policy responses to the new coronavirus pandemic and select those that had at least one official response published until day 40. Six institutions were selected: (i) Governor's Office (executive power), (ii) Participatory Councils of public health (participatory body, with presence of civil society organizations), (iii) State Parliament (legislative power), (iv) Public Prosecutor's Office (judicial power), (v) Regulatory authority (executive power), and (vi) water and sanitation service provider. It is important to note that all five states did not have official responses from all six institutions. For example, the States of Amapá, Roraima, and Amazonas did not have regulatory authorities at the time of research. The absence of an official response or available information was considered as a void of action for that institution or state.

2.2. Policy Inventory

We compiled an inventory of 363 documents from the five states until day 40 of the new coronavirus pandemic, composed of official journal issues that contained policies and regulations from the six researched institutions. We gathered these data with help from the search mechanism on the official journal website of each state using the time intervals described in Table 1. Atlas Ti software (ATLAS.ti Scientific Software Development GmbH,

Berlin, Germany, version 8.4.24.0) was utilized to organize and codify the documents. The unit of analysis was a single policy (e.g., law or regulation), whereby an official journal document can contain several laws and regulations from different government institutions.

A second screening was carried out to select only documents containing policies and regulations related to the coronavirus pandemic using the following keywords: coronavirus, COVID-19, pandemic. This scan resulted in a second inventory composed of 231 documents. The third, and last, screening was utilized to select documents related to the context of WASH, employing keywords related to water, sanitation, and hygiene (e.g., water, sanitation, sewage, handwashing, soap, hygiene). The result of the last scan defined the scope for data collection: 48 policies and regulations from the six evaluated institutions were related to the context of WASH in the first 40 days of the new coronavirus pandemic from the five most impacted states in Brazil.

2.3. Content Analysis

The authors used the content analysis methodology to obtain the necessary information to address the questions proposed in the research. Following Bardin's content analysis methodology [16], after an exploratory reading of the identified sources, in order to evaluate the content of the documents we outlined a codebook (Table 2). In the codebook, three categories were designated: (i) studied institutions, (ii) policy responses, and (iii) water, sanitation, and hygiene. The first category (i) was defined in order to identify the public institutions with excluding codes, as described in Table 2. The second category (ii) identifies the policy responses developed in the context of WASH, split into two sub-categories: population protection and financial and economic sustainability of water and sanitation service providers. The last category (iii) was defined in order to differentiate water, sanitation, and hygiene responses, focusing on water as an essential public service or as a product (e.g., bottled water and hygiene products).

Table 2. Codebook utilized in the content analysis of the policies and regulations focused on water, sanitation, and hygiene.

Category	Indicators	Description	Coding Instructions
Studied institutions	Public Institutions	Identification of the public institution	0 = none 1 = regulatory authority 2 = parliament 3 = participatory council 4 = governor's office 5 = public prosecutor's office 6 = sanitation company
			0 = none 1 = presence
Policy Responses	Population protection	Record measures to economically aid the population	0 = none 1 = presence
	Tariff and subsidies	Record economic emergency support to users of the water and sanitation services	0 = none 1 = presence
	Disconnection	Record cut-offs for non-payers and regulations that forbid the disconnection	0 = none 1 = presence
	Financial and economic sustainability of the service provider	Record emergency support to water and sanitation utilities and providers	0 = none 1 = presence
	Extensions and exceptions	Record extensions of payment date or exceptions in financial duties of the provider	0 = none 1 = presence

Table 2. *Cont.*

Category	Indicators	Description	Coding Instructions
Water, sanitation, and hygiene	Water supply	Record water as a service	0 = none 1 = presence
	Water (product)	Record water as product (e.g., water bottles)	0 = none 1 = presence
	Hygiene	Record hygiene as a human right	0 = none 1 = presence
	Hygiene (product)	Record hygiene as products	0 = none 1 = presence
	Sanitation	Record sanitation as a service	0 = none 1 = presence

For coding, each unit of analysis was evaluated based on 11 indicators (Table 2). The validation of the codebook was carried out with an external researcher and in the first trial each code received a Krippendorff's alpha value (all $\alpha > 0.5$) indicating a good reliability. However, some codes were demonstrated to not be entirely consistent (e.g., "water supply" in the WASH category had to be divided into "water supply" and "water (product)"). In the second validation trial with the final codebook, all codes were considered perfectly reliable ($\alpha = 1$).

Subsequent to the coding, the content analysis data was cross-tabulated and Chi-squared analyses were made to determine whether or not the variables were independent. If the variables were independent, then the results of the statistical test were "non-significant", meaning that there was no relationship between the variables.

3. Results

3.1. The Brazilian States in Context of the Pandemic of the New Coronavirus

Of the five states chosen for this article, two are located in the Northeast region (Ceará and Maranhão) of Brazil and three in the North region (Amapá, Roraima, and Amazonas). In the timeframe chosen for analysis, the first 40 days of the pandemic, these two regions had the highest mortality rates due to COVID-19 in Brazil, with the North region having an index of 54.0 confirmed deaths per 100,000 inhabitants, the Northeast of 36.3, while the Brazilian average was 30.6, according to the Brazilian Ministry of Health [4]. The northern region of the country was considered to be the real epicenter of the new coronavirus pandemic in the country, when considering the volume and impact of contamination.

The North and Northeast regions are also the ones with the worst sanitation indicators in the country. In the North region, only 57% of the population have access to water supply services, while only 10.5% have access to sewerage. In the Northeast region, 74% have access to water supply services and 28% to sewerage [17]. The lack of sanitation directly affects the health of the population, and the population of the North region is seven times more susceptible to becoming ill from waterborne diseases than the Brazilian average, while in the Northeast this number drops to four [8]. In this context of low and unequal access to water and sanitation, it is expected that policymakers do not neglect WASH in the COVID-19 policy responses, at risk of increasing the vulnerability state of communities already facing other grounds of vulnerabilities, related to income, housing, food, and health care.

3.2. Timeline and Content Analysis Results

Table 3 chronologically presents for each state the 48 policies and regulations identified in the collected documents. The first column presents the document publication data. The second column shows the name of the law, regulation, or recommendation and the day relative to the first notification day (day 0). The first notification represents the first person diagnosed with the new coronavirus disease and officially reported to the Brazilian

Ministry of Health. The authors utilized day 0 to evaluate and understand how the institutions reacted, if they followed Federal Governments recommendations and reacted more proactively, or if they waited and only reacted after the first COVID-19 notification in the state. The third column presents a summary of each policy response. Each summary was prepared based on the content analysis of each document, focusing on the context of the COVID-19 pandemic and WASH. It is important to note that the documents can address content that is not restricted to WASH, as the laws, regulations, and recommendations can approach different sectors in the same text.

It is apparent from Table 3 that, except from Roraima State, all first responses were from Governor's offices, and the policy content was the state's emergency declaration. The emergency declaration is a measure used in extraordinary situations and has to be declared by the Governor's office in the face of a direct threat that can cause instability in the territory. Generally, the regulation for its declaration is in the Constitution of each state, and it is declared in cases of natural disasters, financial or economic crisis, situations of war, or epidemics, as is the case of the new coronavirus [2]. When declaring a state of emergency, the government ensures the availability of essential public services, including water supply and sanitation services. However, the government can suspend some of its basic functions and put in place specific plans for this type of situation, which end up limiting the rights of its population, totally or partially, due to this unusual situation.

In all studied states, except from Roraima State, the emergency situation declaration preceded social isolation, quarantine, social distancing, and infection prevention and control (IPC) measures, and all policy responses from Governor's office after the declaration quoted this first declaration. In Roraima State, the Public Prosecutor's Office and the Parliament acted before the Governor's office and published measures focused in availability and affordability—a ban on water and energy cut-offs and controlling the prices of essential products (e.g., hygiene products and bottled water).

Table 4 shows the proportion of seven types of policy responses identified in the collected documents. The seven types of policy responses were defined by combining the data collected using the indicators described in the codebook (Table 2).

Table 3. Timeline of policy responses organized in chronological order from day 0 to day 40.

Amazonas State Public Institutions Policy Responses		
Data	Response	Policy Content
15/03/2020	Amazonas—1° notification—day 0	
16/03/2020	Amazonas—Governor office—"Decreto n° 42.061"—day 1	Emergency situation in public health and institutes the Intersectoral Committee to Confront and Combat COVID-19
23/03/2020	Amazonas—Governor office—"Decreto n° 42.100"—day 9	Public calamity
	Amazonas—Governor office—"Decreto n° 42.101"—day 9	Determines suspension of commercial establishments and non-essential services
24/03/2020	Amazonas—Governor office—"Decreto n° 42.106"—day 10	Determines suspension of commercial establishments and non-essential services
25/03/2020	Amazonas—Public prosecutor's office—"Recomendação n° 01"—day 11	Prohibition to cut off energy and water services
26/03/2020	Amazonas—Parliament—"Lei 5.143"—day 12	Prohibition to cut off water services
	Amazonas—Parliament—"Lei 5.146"—day 12	Prohibition of price increases for essential goods and services as well as cut and interruption of services
20/04/2020	Amazonas—Governor office—"Decreto n° 42.216"—day 37	Determines suspension of commercial establishments and non-essential services
24/04/2020	Amazonas State—day 40	

Table 3. Cont.

Ceará State Public Institutions Policy Responses		
Data	Response	Policy Content
16/03/2020	Ceará—Governor Office—"Decreto nº 33.510"	Emergency situation in public health
17/03/2020	Ceará—1° notification—day 0	
19/03/2020	Ceará—Governor office—"Decreto nº 33.519"—day 3	Intensifies COVID 19 coping measures
20/03/2020	Ceará—Public prosecutor's office—"Recomendação nº 01"—dia 4	Recommends to municipalities the wide dissemination of measures to contain coronavirus
23/03/2020	Ceará—Governor office—"Decreto nº 33.523"—day 7	Provisions on the prohibition of charging water bills to low-income families
24/03/2020	Ceará—Governor office—"Decreto nº 33.534"—day 8	Provisions on the prohibition of charging water bills to low-income families
26/03/2020	Ceará—Public prosecutor's office—"Portaria nº 004"—day 10	Population protection measures during the crisis
27/03/2020	Ceará—Public prosecutor's office—"Recomendação nº 001"—day 11	Monitor the Sanitation Company to check supply interruptions during the pandemic
	Ceará—Public prosecutor's office—"Portaria nº 005"—day 11	Monitor the Sanitation Company to check supply interruptions during the pandemic
30/03/2020	Ceará—Public prosecutor's office—"Recomendação nº 002"—day 14	Prosecutor recommends the Assembly to verify possible uses of social benefits in favor of applications
03/04/2020	Ceará—Parliament—"Lei nº 17.196"—day 18	State funding of water tariffs
08/04/2020	Ceará—Regulatory authority—"Resolução nº 265"—day 23	Authorizes the use of special resources by the Sanitation Company
09/04/2020	Ceará—Public prosecutor's office—"Portaria nº 009"—day 24	Authorizes the monitoring and inspection of the State's delegated and non-delegated public services
17/04/2020	Ceará—Parliament—"Lei Complementar nº 214"—day 32	Authorizes the Executive to pay water and sewage tariffs for rural users
26/04/2020	Ceará State—day 40	
Amapá State Public Institutions Policy Responses		
Data	Response	Policy Content
17/03/2020	Amapá—Governors office -"Decreto 1.377"	Temporary measures to combat COVID-19 and emergency situation declaration
19/03/2020	Amapá—Governor office—"Decreto nº 1.414"	Determines suspension of commercial establishments and non-essential services
20/03/2020	Amapá—1° notification—day 0	
22/03/2020	Amapá—Governor office—"Decreto nº 1.415"—day 2	Determines suspension of commercial establishments and non-essential services
03/04/2020	Amapá—Executive Council—"Resolução nº 009"—day 15	State funding of water tariffs
	Amapá—Governor office—"Decreto nº 1.497"—day 15	Determines suspension of commercial establishments and non-essential services
09/04/2020	Amapá—Governor office—"Decreto nº 1.519"—day 21	Implements "Água: Conta Paga"
29/04/2020	Amapá—day 40	

Table 3. Cont.

Roraima State Public Institutions Policy Responses		
Data	Response	Policy Content
18/03/2020	Roraima—Public prosecutor’s office—“Recomendação nº 02”	Recommends the sanitation company to not interrupt water supply
19/03/2020	Roraima—Public prosecutor’s office—“Recomendação nº 06”	Price control
	Roraima—Parliament—“Lei nº 018”	Provides for measures to protect the population of Roraima
	Roraima—Parliament—“Lei nº 017”	Prohibition to cut off energy and water services
20/03/2020	Roraima—Parliament—“Lei nº 024”	Provisions on the prohibition of charging water bills to low-income families
22/03/2020	Roraima—1° notification—day 0	
24/03/2020	Roraima—Governor office—“Decreto nº 28.635”—day 3	Emergency situation
27/03/2020	Roraima—Parliament—“Lei nº 041”—day 6	Prohibition of interruption/cut-off in churches
	Roraima—Governor office—“Decreto nº 28.662”—day 6	Exceptional and temporary measures applicable to the private sector
	Roraima—Parliament—“Lei nº 024”—day 6	State funding of water tariffs
	Roraima—Parliament—“Lei nº 017”—day 6	Prohibition to cut off water services
06/04/2020	Roraima—Parliament—“Lei nº 060”—day 16	Exemption and subsidy by the Government from the tariff collection
30/04/2020	Roraima—day 40	
Maranhão State Public Institutions Policy Responses		
Data	Response	Policy Content
19/03/2020	Maranhão—Governor office—“Decreto nº 35.672”	Emergency situation
21/03/2020	Maranhão—1° notification—day 0	
	Maranhão—Governor office—“Decreto nº 35.677”—day 1	Contagion prevention measures and suspension of establishments
23/03/2020	Maranhão—Governor office—“Decreto nº 35.679”—day 3	Provisions on the prohibition of charging water bills to low-income families
03/04/2020	Maranhão—Governor office—“Decreto nº 35.714”—day 14	Determines suspension of commercial establishments and non-essential services
11/04/2020	Maranhão—Governor office—“Decreto nº 35.731”—day 22	Determines suspension of commercial establishments and non-essential services
30/04/2020	Maranhão—day 40	

Closer analysis of Table 4 shows that social isolation measures and water services tariff bans or subsidies were the most frequent content in the policy and regulation responses to the new coronavirus in the context of WASH. The social isolation policies mainly determined which services should temporarily close and those which should remain open. In all five studied states the social isolation policies guaranteed the availability of essential public services, as did the emergency declarations, including water supply and sanitation services. The studied states adopted at least one kind of water service subsidy, with various institutions taking such measures—e.g., in Ceará State it was the Governor's office, in Roraima State it was the Parliament, and in Amazonia it was the Public Prosecutor's Office.

Table 4. Types of coronavirus policy responses across the 48 measures analyzed.

Type of Policy Responses	%
Social isolation measures ¹	22.92
Water services tariff bans or subsidies ²	22.92
Ban interruption of water supply ²	14.58
Water provider economic sustainability ³	12.50
Emergency situation or public calamity Declarations	10.42
Price control (water as a product) ⁴	10.42
Monitor continuity of water services	6.25

¹ The social isolation measures combine all responses identified in the “Population protection” indicator (Table 2), including quarantine, social distancing, affordability, availability, and quality of service provisions policies. ² The “tariffs and subsidies” and “disconnection” indicators from the “Policy Responses” category (Table 2) relates to “Water services tariffs ban or subsidies”, and “Ban interruption of water supply” types of policy responses. ³ The combining of the indicators “Financial and economic sustainability of the service provider” and “extension and exceptions” (Table 2) provided the proportion of the “Water provider economic sustainability measures”. ⁴ The indicators “Water (product)” and “Hygiene (product)” (Table 2) relates to “Price control (water as a product)” type of policy response.

Although bans on cut-off policy responses are the third most common response in the 48 studied policy responses (Table 4) only two states adopted those measures. Two institutions in Roraima State published policy responses that recommended or banned the interruption of water supply—the Parliament and Public Prosecutor’s Office—more than once each. Amazonas State had a recommendation from the Public Prosecutor’s Office (day 11) and later (day 12) Parliament implemented Law n° 5.146 prohibiting price increases for essential goods and services as well as cut-off and interruption of essential services.

Roraima, Amapá, and Ceará States published policy responses focused on the economic sustainability of water service providers (Table 4). These policies comprised measures of state financing the water tariffs and extensions or exceptions in financial obligations of the provider. The emergency situation and price control policy responses were present in all studied states and encompassed the first measures in almost all cases.

Ceará State was the only state to publish policy responses focused on monitoring the continuity and quality of water supply services by the service provider (Table 4). The Ceará State Public Prosecutor’s Office recommended the monitoring in two documents—Recommendation n° 001 and Ordinance n° 005—directing attention to low-income residential and rural areas. The same institution also recommended the monitoring and inspection of all State-delegated and non-delegated public services—Ordinance n° 009.

Figures 1 and 2 show an overview of the relationship between elapsed days and the cumulative policy responses. In Figure 1, it is possible to observe that the first three weeks of the coronavirus pandemic in the states represented the most intensive period in institutional responses: 72% of the policy responses were issued in this 21-day time interval, with an average of 0.5 responses per day. Figure 2 provides an overview of policy responses per institution per day. As shown, the Governor’s Office had the most intensive policy responses to the coronavirus outbreak, clustering 47% of the measured events in the first 40 days. The second and third most intensive responses were from the Parliament, 25% of measured events, and the Public Prosecutor’s Office, 22.7% of measured events. The three least responsive institutions were the participatory councils and the regulatory authority, both with 2.3% of measured events, as well as the water and sanitation service providers, which had no official measured responses.

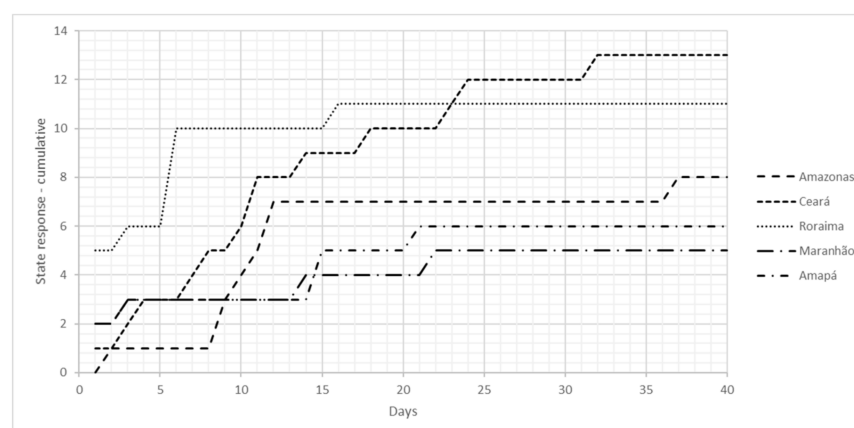


Figure 1. Cumulative measured responses of states to the coronavirus pandemic in the first 40 days.

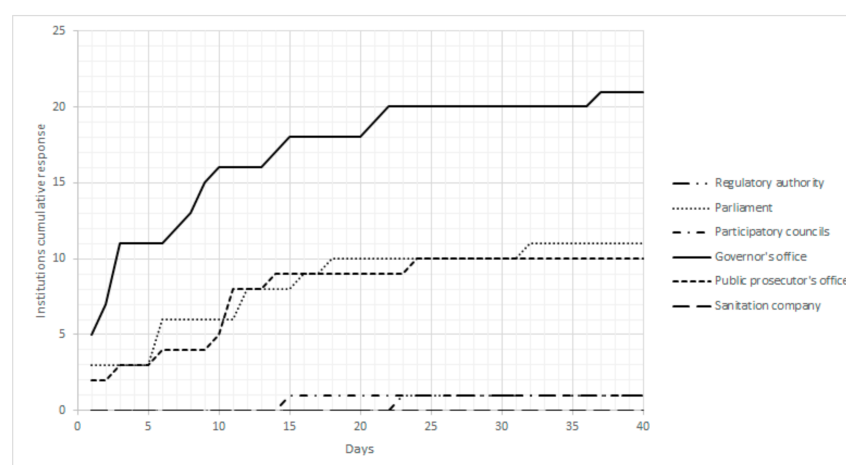


Figure 2. Institutional measured responses to the coronavirus pandemic in the first 40 days.

We identified in these responses (Tables 3 and 4) two major ramifications regarding interrelated policy concerns that demand increasing attention and their implications for law and regulation in Brazil:

- Population protection responses: How to financially help individuals who are considered to be in socially and economically vulnerable situations. This financial help occurs in the form of exemptions from tariffs and subsidies (affordability) and a ban on disconnecting non-payers (availability).
- Financial and economic sustainability of the provider: How to ensure continued functioning of service providers, ensuring that the service will not be interrupted due to low or non-existing tariffs during the pandemic. Extensions of payment dates or exceptions in the financial duty of the service provider were identified in the policy and regulating responses.

3.3. Differences and Similarities in the Policy Responses to the New Coronavirus Pandemic in the Institutions and Brazilian States

Although the Governor's Office was the most proactive institution, only 20% of the measured policy responses focused on population protection in the context of water and sanitation services; this compared to the parliament and public prosecutor's office which had almost 70% of their responses focused on population protection (chi-squared minimum 0.019). The Governor's offices proactive responses in the five states focused mainly in social isolation measures (45%) and emergency situations or public calamity declarations (30%) types of policy responses. Regulatory authorities and participatory councils were significantly more focused on the financial and economic sustainability of the water and

sanitation service providers (chi-squared 0.003 and 0.007) with 100% of their measured responses focused in this area (Table 5). No response focused on the context of WASH from the water and sanitation service providers was identified.

Table 5. Percentage of institutional response per type of policy responses.

Institutional Response/Type of Policy Response	Governor Office	Public Prosecutor's Office	Parliament	Regulatory Authority	Executive Council	Service Provider
Social isolation measures	45%	8%	7%	0%	0%	0%
Water services tariff bans or subsidies	20%	25%	29%	0%	0%	0%
Ban interruption of water supply	0%	17%	36%	0%	0%	0%
Water provider economic sustainability	0%	8%	21%	100%	100%	0%
Emergency situation or public calamity declarations	30%	0%	0%	0%	0%	0%
Price control (water as a product)	5%	17%	7%	0%	0%	0%
Monitor continuity of water services	0%	25%	0%	0%	0%	0%

The responses of the Parliament and the Public Prosecutor's Offices of the five states were mainly focused on water services tariff bans or subsidies and on ban of interruption of the water supply; the first institution dedicated 65% of the policy responses in those two population protection measures and the second dedicated 42% of the policy responses (Table 5). Another focus of the Public Prosecutor's Offices was the monitoring of continuity of water services by the state service providers, 25% of the measured responses.

It is notable that although all states took actions to ban water fees or provide subsidies, only two states introduced measures that also banned interruptions to water supply, Amazonas and Roraima States (Table 6). Amazonas State dedicated 30% of the measured policy responses to banning disconnection of non-payers (Table 6), and 10% to water service tariff bans or subsidies; however, no response was observed in relation to the economic sustainability of the water provider. Roraima State dedicated 60% of the responses in the water supply ban cut-off and water tariffs subsidies, and dedicated 30% of the measured responses to the economic sustainability of the water provider (Table 6).

Table 6. Percentage of states response per type of policy responses.

States Policy Responses/Type of Policy Responses	Amazonas State	Ceará State	Amapá State	Roraima State	Maranhão State
Social isolation measures	30%	30%	30%	20%	30%
Water services tariffs ban or subsidies	10%	30%	20%	20%	10%
Ban interruption of water supply	30%	0%	0%	40%	0%
Water provider economic sustainability	0%	30%	10%	30%	0%
Emergency situation or public calamity declarations	20%	10%	10%	10%	10%
Price control (water as a product)	10%	20%	10%	10%	10%
Monitor continuity of water services	0%	30%	0%	0%	0%

Four states approved measures to compensate the water provider for the loss of income from the water tariff bans or subsidies (Table 6). Amazonas State was the only one to not publish responses focused on the service provider's economic sustainability,

though it approved both population protection measures—banning water cut-offs and implementing water services tariff bans or subsidies. Another important observation is that only Ceará State adopted policy responses focused on monitoring the quality of the water supply service, focusing on preventing shortages in low-income residential areas and rural zones; however, Ceará State was one of the three states that did not published measures to ban interruption of water supply to non-payers.

3.4. Population Protection Gaps

Population protection responses were focused on tariff cuts and subsidies for the users (66% of the measured responses) and on banning disconnection of non-payers (59% of the responses; chi-squared 0.001 and 0.019). In all 48 documents analyzed in this research, population protection represented by tariff cuts and subsidies was directed to only a portion of users and conditioned to government pre-registrations. This protection was intended for users in conditions of social and economic vulnerability (all five studied states) and for users in rural areas (only one studied state) with the condition that users were registered in the federal government's social benefits unification program (CadÚnico). Another constraint relates to the rules for maintaining these users in vulnerable situations in the social programs, which limit maximum monthly water volumes; when exceeded, the user stops receiving benefits such as reduced tariffs or subsidies.

There were no measured responses aimed at people in socially and economically vulnerable situations who were not users of the water supply and sanitation systems, who were unsubscribed from social programs like CadÚnico, or who could not be registered for various reasons. However, the socially and economically vulnerable situations exist outside of these areas: residents of informal settlements with no connection to the network or people in homelessness, for example.

Policy responses focused on the financial and economic sustainability of the provider (38% of the measured responses; chi-squared 0.003 and 0.019) focused on extending payment dates or made exceptions for the use of emergency monetary funds. The regulatory authority was responsible for most of these measured responses (38%) when compared to the other institutions: parliament, with 25% of the responses, focused on the providers' financial and economic sustainability; and the governor's office, public prosecutor's office, and participatory council had 13% each. There were no measured responses for the sanitation company.

Overall, these results suggest that the public entity most responsive to the coronavirus pandemic in the context of water supply and sanitation in the first 40 days, the governor's office, did not direct most of its actions specifically to population protection, although, in general, this was the direction of the responses measured in this study (71% of all responses measured). The public responses were aimed at the users in the most vulnerable situations of the water supply and sanitation systems; however, there were exclusion criteria for the care of these people, such as government registrations and limitation of the volume of water consumed per month. Another important factor observed is that the population not served by the water supply and sanitation system was not the target of any action by the public institutions studied. The regulatory authority responses were aimed only at the financial and economic sustainability of the sanitation company.

4. Discussion

4.1. The Human Rights to Water and Sanitation as a Tool for Health Promotion in Policy Responses to the New Coronavirus Pandemic

Health promotion is intrinsically linked to the fulfillment of human rights as a whole, and the use of the human rights framework can help to design more effective and efficient actions to deal with health needs [18]. Formulating public policies that respect human rights standards—e.g., acceptability, accessibility, affordability, equality, and non-discrimination—can provide structural changes to the reaction measures in public health emergencies, exemplified by the new coronavirus pandemic.

Equality and non-discrimination are cross-cutting human rights principles that states need to guarantee, regardless of people's social conditions [19] or the status of land tenure. The policy responses from Brazilian states to the new coronavirus from the WASH perspective are an example of well-intentioned public policies that were not thought through in relation to the human rights principles.

Responses to COVID-19 must recognize different realities within the same population; any measures that do not observe these differences will jeopardize the survival of large segments of the population globally [20]. States' decisionmakers must ensure that individuals and groups do not suffer from discrimination and that they can enjoy full equality in the protective measures against the coronavirus pandemic. Such laws and regulations are generally intended to protect the public health overall; however, as we will discuss below, special measures are necessary to ensure that all populations are fully able to access water and sanitation. Affirmative actions must be based on the HRWS principles, at the risk of increasing existing vulnerabilities.

4.2. Population Protection Responses—Equality and Non-Discrimination

The population protection responses identified in this study are seen as supplementary measures to help make the social isolation and quarantine regime viable, as we can observe in the Roraima State Public Prosecutor's Office Recommendation n° 02/2020 [21]:

"Considering that the situations described above (coronavirus pandemic) requires uninterrupted access by the general population to water services, in order to maintain adequate hygiene and combat the spread of the new coronavirus—COVID-19, and electricity, in order to implement the home isolation regime, reducing the need for exits to external environments, as well as for the performance of remote work, both for public servants and private sector workers" [21].

The guarantee of access to water services as a protection measure from COVID-19 is presented in all policy responses aimed at population protection in this study. In all collected documents the justification for this type of response was the economic consequences of social distancing measures. Two major socio-economic impacts of the COVID-19 pandemic are: an escalation in pressure on prices and an increase in the world unemployment rate, which is projected to reach more than 10% by the end of 2020 [22]. In this scenario, the affordability of essential services, water, sanitation, and energy, as examples, is crucial for mitigating the impacts on communities in vulnerable situations [11].

The affordability of water and sanitation services is a challenge to regulators and policy makers. To ensure the affordability of services, legal and regulatory frameworks must observe the specific needs and conditions of different groups that live in vulnerable situations and offer tailored solutions [23], affirmative actions aimed at increasing equality and non-discrimination. Equality, in this context, does not mean that everyone has to be treated the same way at all times [24]. Non-equal populations may require different measures in order to achieve substantive equality, and it is a state obligation to adopt these affirmative responses, giving preference to certain groups in order to redress past discrimination [11]. The regulatory body and policymakers, as part of the state, must also consider these principles primarily in extraordinary situations where economic and social conditions of specific groups are affected.

In this context, the public health emergency of international concern caused by the new coronavirus has impacted society at different levels, deepening the issues of social and economic vulnerability. The necessary social distancing measures impact the poorest sections of society, mainly due to their dependence on income from informal jobs, and social protection measures and job programs are pointed as a solution to avoid deepening the crisis [20]. With loss of income due to the need for social distancing, the inability to pay for basic services, such as water and sanitation services, also increases. To this end, policymakers and regulatory actors could promote the use of appropriate policy responses, including free or low-cost provisions for households with very low or no income to guarantee safe access to water and sanitation [23].

All states investigated in this paper adopted some mix of measures intended to mitigate socio-economic impacts on populations and ensure that the water and sanitation services are affordable. The first example is the provisory program of the Amapá State Governor's office, which was established on the 21st day of the pandemic. The social program was the "Água: conta paga" (Water: tariff paid), through Law 1.519 of 9 April 2020. The program aimed to exempt users registered in the federal government's registry of social programs (CadÚnico) from paying the water supply and sanitation tariffs. The State of Amapá has approximately 15,962 families [25] that are in the CadÚnico and already have discounts (affirmative actions, i.e., social tariffs) on the water and sanitation services tariff. Another example of affirmative action is the Ceará State Governor's Office that extended exemptions from payment of water and sanitation service tariffs to low-income users living in rural areas, Law No. 214 of 17 April 2020 (day 32 of the pandemic) [26].

These two policy responses illustrate the main issue of the population protection measures: they are intended to institute affirmative actions aimed at reducing inequalities and redress economic and social situations. However, they are tied to a specific socio-economic scenario, i.e., people who live in areas with water and sanitation service coverage and with already existing house connections. As follows, the non-existence of other laws and regulations in the collected documents that were applied to communities in areas without service coverage, or people who opted to remain disconnected from the system due to affordability issues, points out that the states studied in this paper violated the human rights principles of equality and non-discrimination. According to the Report of the Special Rapporteur on human rights to safe drinking water and sanitation [23], a regulatory framework should not discriminate against communities, individuals belonging to groups at risk, and marginalized people. Slums and informal settlements are often not taken into account in urban planning [11], and people living in them are often simply absent from public policies and regulations in the context of water and sanitation. People in homelessness are also not reached by these policies, and are in a complex state of diverse vulnerabilities, without access to housing, water, sanitation, or proper hygiene, and often without the protection of public health systems.

In addition to the service connection restriction, there is another excluding condition: mandatory registration in the federal government's unique databank for social policies (CadÚnico), as exemplified by Law 1.519 of 9 April 2020 from the Amapá Governor's Office [26], and in all policies present in the collected documents that focused on exemption from tariffs for water and sanitation services. Another example of a law that utilizes these two mechanisms to exclude beneficiaries is Decree n° 35.679 of 23 March 2020 (day 3) from the Maranhão Governors' office; the excerpt below describes which categories of users will be exempt from paying fees:

"Art. 1 The following categories of consumers are temporarily exempt from paying the tariffs for water supply and sewage collection services provided by "Companhia de Saneamento Ambiental do Maranhão" (CAEMA): I—individuals who use the services for residential purposes and which consume up to 10 m³ (ten cubic meters) per month of water; II—individuals residing in a municipality that is part of the "Mais IDH" Program, whose action plan was instituted by Decree n° 30.612, of 2 January, 2015, which has its services provided by CAEMA and which is part of the Single Registry for Social Programs of the Federal Government (CadÚnico); III—legal entities in a condominium regime, established based on popular housing programs included in Band I of the "Minha Casa Minha Vida Program" [27].

The first exemption described in the excerpt above—having a monthly consumption restriction of 10 cubic meters of water—is the same maximum consumption that entitles a household to benefit from a social tariff program. Failing to keep consumption below the maximum allowed value can lead to unsubscription in the social tariff program. The second and third exemptions are social programs that require prior registration with the federal government's unique databank for social policies (CadÚnico)—"Mais IDH" and "Minha Casa Minha Vida". Those policy responses are exclusionary, whereas water and

sanitation services are essential in combating the new coronavirus, and social isolation measures affect the entire population and can increase the vulnerability of people who previously were not in a situation of social and economic vulnerability [22].

Another important exclusion factor observed in the above section, and reproduced in other laws and regulations focused on protecting populations, is the limitation of water volume to be consumed as a condition for receiving the social benefit. According to HRWS standards, the legal and regulatory framework should give a practical meaning to “availability” and ensure at least access to a minimum essential amount of water that is sufficient, reliable, and safe for personal and domestic uses to prevent disease [23]. Establishing this value must take into account social and contextual health conditions. In a public health emergency situation, where adequate hygiene is an essential factor for the prevention of contagion, limiting the volume of water for people in vulnerability, and making this social benefit conditional on not exceeding this volume presents a risk. This risk increases the vulnerability of these people, exposing them to the possibility of contagion due to poor hygiene and putting the economic security of families at risk. All laws and regulations observed in this study imposed a maximum water consumption value for users, regardless of the number of residents in the houses.

The standards established by the HRWS could be used as a foundation for the COVID-19 policy responses that considers everyone’s situations of vulnerability. The first measures focused on population protection could expand their focus to all populations, not just communities living in the service coverage area and already connected to the service network. Additionally, the focus could go beyond people previously served by social programs. It is important to consider that reduction of social programs is part of the agenda of the Brazilian President Jair Bolsonaro, who during the first year of his term (2019) reduced services to 9,722,000 families and has left one million families waiting to be registered in the CadÚnico [28].

Another identified population protection response was the ban on the cutting off of water supplies, which comprised 59% of the responses focused on population protection. This second response was extended to all users of the system, regardless of registration in social programs. The Roraima State Public Prosecutor’s Office in Recommendation n° 02/2020 [21] (day 0) proposed that water and electricity supply not be cut off due to payment default, and that milder measures should be put in place to offset users’ bad debts. Only two states adopted measures to ban water supply cut-offs. However, these measures fail both to enforce the reconnection to service of users whose service was previously cut off, and to ban penalties due to nonpayment of bills.

It is possible to observe a predominance of legislative and judicial entities ensuring population protection (70% of the responses focused on this theme) which is contrasted with the responses of the executive power (33% of responses focused on protecting the population). Part of this result can be explained by the political context of Brazil.

The Lancet (2020) [1] published an editorial criticizing the position of Brazilian President Jair Bolsonaro, indicating that perhaps the biggest threat to Brazil’s COVID-19 response is the President himself. The editorial highlighted the resignation of the Health Minister in the middle of the pandemic, continuous actions, and presidential speeches minimizing the pandemic and putting social isolation measures at risk as some reasons for the threat. In addition to these reasons, the constant clash between President Bolsonaro and the governors of states that are not aligned with his political ideals can also be highlighted [29].

This governance gap on the part of federal executives and the Ministry of Health caused the responses of state executives to be dispersed and disordered. From the documents analyzed in this study, it was possible to observe that most of the actions (77% of the Governor’s office measured responses) of the state governors in the early days of the pandemic dealt with the implementation and rectification of social isolation measures, only addressing the issue of water as a product to be sold in stores. This relationship between water as a supply service and water as a product (bottled water) becomes evident when comparing the responses of the legislative and judiciary powers with the responses of the

executive power: 100% of legislative and judiciary responses considered water an essential service that should not be interrupted compared with only 33% of responses from the Governor's office.

4.3. Financial and Economic Sustainability of Water and Sanitation Service Providers

This variable can be observed as protective of water and sanitation service providers (38% of the total measured responses), as noted by the predominance of the code "extensions and exceptions", which focused on extensions of payment dates and exceptions for the use of emergency monetary funds. This policy response is a direct reaction to population protection responses, mainly tariff exemptions. It is possible to observe in the timeline (Table 3) that protection measures for the service providers in all states were sanctioned or suggested after the population protection measures. For example, Resolution n° 265/2020 [30] from the State of Ceará's Regulatory Agency was published 16 days after charging water tariffs to users in vulnerable situations was prohibited. In this Resolution, the regulatory agency authorizes the use of financial resources from the contingency tariff:

"Art. 1 To authorize the exceptional use, on the part of CAGECE (Water and Sanitation Company from Ceará State), for the purposes of supplying the measures of Art. 3, of State Decree n° 33.353, of 23 March 2020, of the resources arising from the Contingency Tariff, related to the regulation of this Agency [. . .]" [30].

The American Water Works Association [31] recommends that utilities should establish cash reserve policies as an integral component of financial sustainability. Such financial reserves could be used in emergency situations, such as the new coronavirus pandemic, and help to maintain what it [20] calls the purpose of modern water and wastewater services: "to bring clean water to those who need it and to make dirty water go away".

Supporting service providers in maintaining a continuity of service with minimal disruption, and promoting continuity of services for low-income households during the pandemic, are important components of ensuring water safety and the health of communities. Maintaining the economic sustainability of service providers, as a response to lower tariff payments, is an institutional obligation to guarantee the safety of the users.

For such objectives to be achieved, public policies could be a path to support water and sanitation service providers in times of crisis, like now, for instance, during the new coronavirus pandemic. Resolution n° 265/2020 from the State of Ceará Regulatory Agency [30], the regulatory agency that authorizes the use of financial resources from contingency tariffs, is intended to ameliorate the negative economic effects that the pandemic has had on water supply and sanitation service providers.

From the observed data, it is possible to infer that the regulatory authorities have taken on the role of protecting water and sanitation utilities, as 100% of measured responses from regulatory agencies focused on the financial and economic sustainability of providers.

As observed in Table 4, 12.5% of the measured responses focused on the economic sustainability of water and sanitation service providers, mostly as a response to the population protection policy, and aimed at maintaining the operationality of the companies during the new coronavirus crisis. The emergency program "Água: Conta Paga" from Amapá State that guarantees payment of water tariffs for users in vulnerable situations is funded by the state government, which is similar to all other public policies to protect populations observed in this study.

4.4. COVID-19, Human Rights, and the Brazilian States Policy Responses

COVID-19 has disproportionately affected the Brazilian population. This asymmetric impact is, in part, due to the huge disparities in access to water and sanitation services. Therefore, the federal and state governments are expected to protect the population based on the status of their vulnerability. Each situation requires special measures to ensure that all groups and individuals have access to water and sanitation [7]. In all 48 policy responses from the five Brazilian states, it was not possible to identify measures aimed at guaranteeing equal access to water and sanitation for the entire population.

The similarity between the responses to the coronavirus in the five states studied—similar temporality and content of the political responses—points out that there was no effort to observe the peculiarities of each population. Aspects such as: rural areas, indigenous lands, people in homelessness situations, or number of families registered in social programs were not considered in the policy responses.

Another characteristic of the policy responses to the new coronavirus pandemic is the temporality. The nature of the pandemic requires fast responses, short-term actions, though it opens an opportunity to improve the policy and regulatory framework in the WASH context in a long-term perspective, and this legacy could help reduce the inequalities in the access to water and sanitation in Brazil, and also improve the institutionalization and operationalization of the human right to water and sanitation [7]. Policy-makers that have invested in responses based on the human rights framework are shaping more resilient institutions and consequently more resilient communities, strengthening a state's ability to contain threats to public health.

5. Conclusions

According to the WHO [6], during the new coronavirus pandemic, the provision of safe water, sanitation, and hygienic conditions is essential to protecting human health. States have the obligation to guarantee the provision of these essential services considering equality and non-discrimination as a basic human rights principle. The need to deliver water and sanitation services affordable, available, and safe to everyone is not new; however, the scale of the challenge and the urgency due to the health crisis is. In this context, the policymakers and public institutions issued responses aiming the population protection and the financial and economic sustainability of water and sanitation service providers. However, as observed in the Brazilian States policy responses, those WASH related measures did not considered equality and non-discrimination as basic principles.

In this study, we identified the Governor office's as the more proactive institution when responding to the new coronavirus pandemic in the first 40 days in the five states assessed. However, the Governor office's policy responses proved to not be focused on population protection in a WASH context. As a fast reacting institution in the executive power, it is expected that the content of the responses is focused on guaranteeing safe access to water and sanitation to all people, considering the vulnerabilities and inequalities faced by the population in the respective state, aiming at protecting those unserved or underserved by water and sanitation services. The other studied institutions proved to be less proactive than the Governor's office. Most of the population protection policy responses were published by the Parliament and the Public Prosecutor's Office, though the responses had gaps of protection and were mostly the same in all five states.

An expected response from the policymakers and public institutions would be to apply principle of the human rights to water and sanitation in the assessment of the COVID-19 measures, guaranteeing safe access to water and sanitation to all, including those that are in hard-to-serve areas such as informal settlements, people in homelessness situation, and rural areas. Another response would be the extension of the identified measures of population protection—exemptions from tariffs and subsidies and ban on disconnecting non-payers—to everyone. Regarding the water service providers, the impact of the financial and economic imbalance, due to the population protection measures, would need to be addressed by policymakers, so that this economic imbalance does not affect the most vulnerable users.

A natural progression of this study is to analyze separately each public institution, taking into consideration the role of each institution in the WASH sector, such as the role of regulatory agencies in protecting the populations served by service providers. A more careful assessment focused on only one institution could contribute to strengthening the legal or regulatory framework that could reduce the impacts of possible future public health emergencies.

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