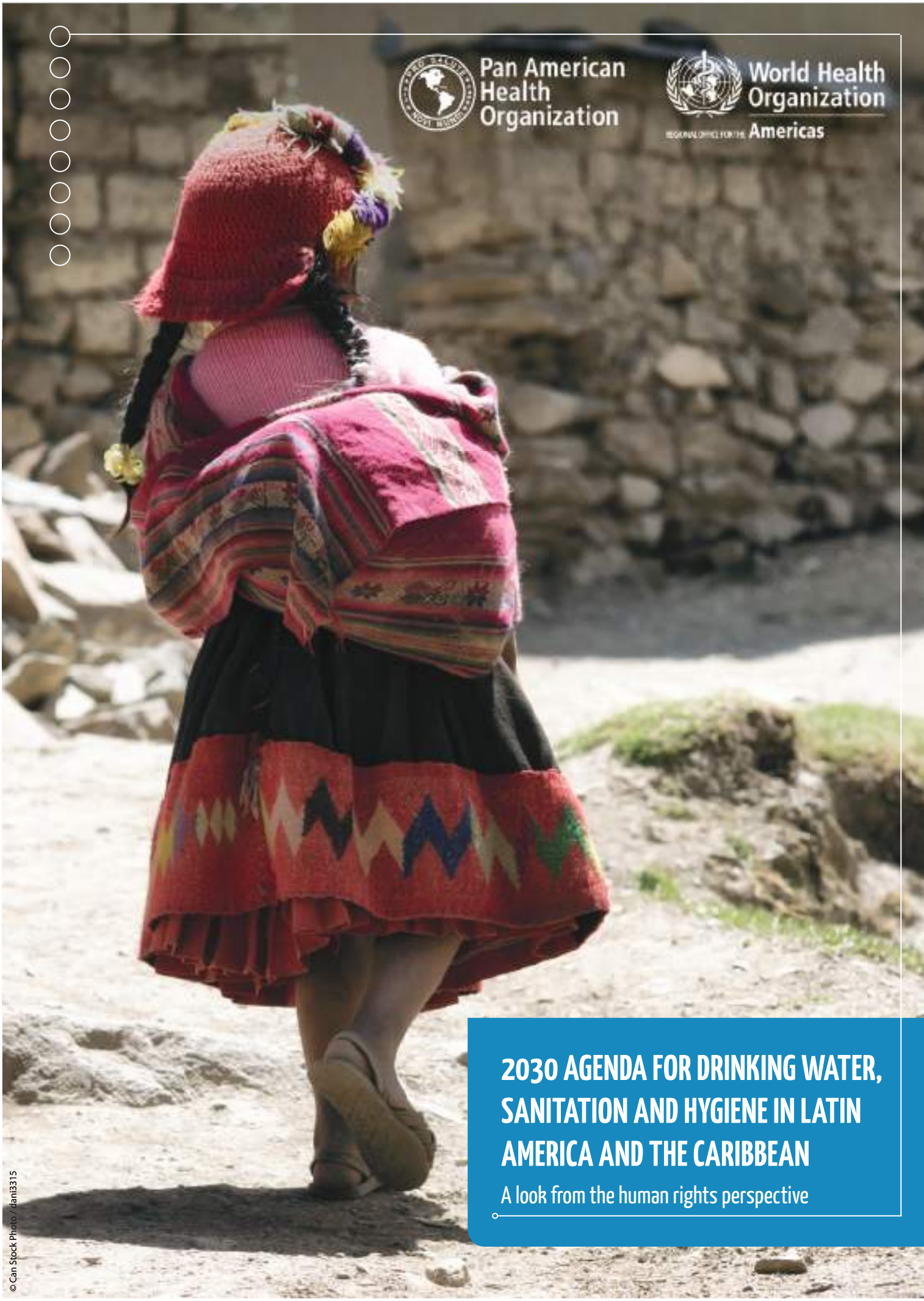

Pan American Health Organization

World Health Organization

Americas

2030 AGENDA FOR DRINKING WATER, SANITATION AND HYGIENE IN LATIN AMERICA AND THE CARIBBEAN

A look from the human rights perspective

Pan American Health Organization

World Health Organization
REGIONAL OFFICE FOR THE Americas

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2030 Agenda for Drinking Water, Sanitation and Hygiene in Latin America and the Caribbean: A Look from the Human Rights Perspective

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CDE/CE/2020

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CONTENTS

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List of Abbreviations

IAIW	Inequality-adjusted index of access to water
IAIS	Inequality-adjusted index of access to sanitation
ECLAC	Economic Commission for Latin America and the Caribbean
HRWS	Human Rights to Safe Drinking Water and Sanitation
DHS	Demographic and Health Survey
ETRAS	Regional Water and Sanitation Technical Team
FIOCRUZ	Oswaldo Cruz Foundation
GLAAS	Global Analysis and Assessment of Sanitation and Drinking water (UN-Water)
IAEG-SDGs	Inter-Agency and Expert Group on SDG Indicators
HOI	Human Opportunity Index
IPUMS	Harmonized International Census Data for Social Science and Health Research
JMP	Joint Monitoring Programme for Water Supply (UN-Water)
MICS	The Multiple Indicator Cluster Surveys (UNICEF)
MDG	Millennium Development Goals
SDG	Sustainable Development Goals
WASH	Drinking water, sanitation and Hygiene
WHO	World Health Organization
UN	United Nations
PAHO	Pan American Health Organization
GDP	Gross Domestic Product
UNICEF	United Nations Children's Fund

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PROLOGUE

The publication **"The 2030 Agenda for water supply, sanitation and hygiene in Latin America and the Caribbean: A look from the human rights perspective"** was prepared in coordination with the collaborating center FIOCRUZ, of the Brazilian Ministry of Health, under the general supervision of the Regional Technical Team for Water and Sanitation (ETRAS) of the Climate Change and Environmental Determinants Unit of the Department of Communicable Diseases and Environmental Determinants of Health of the Pan American Health Organization (PAHO). This document was inspired by the need to promote comprehensive actions in the management of water and sanitation services with a human rights focus within the Sustainable Development Goals (SDG); in addition, it ratifies the results reported in a PAHO study (2016)[1] on the profound inequalities between urban and rural areas in access to water and sewage services, and the correlation with characteristics such as gender, age, income, education, among others.

The main focus of this study is to analyze the possibilities of meeting the objectives of the Sustainable Development Goals 6.1 and 6.2 and the human rights to water and sanitation in Latin American and Caribbean countries, incorporating the issue of inequality as a cross-cut axis, identifying spaces where it is concentrated; therefore, this study also identifies where these rights are most violated and where intervention is needed.

In this exercise, an institutional assessment is included from the point of view of available human resources, the level of regulation and the funding needed to meet them, emphasizing inequalities and other characteristics that determine whether there are population groups excluded from or invisible in the project of public policies specific to the water and sanitation sector. In this regard, the study provides evidence for Member States to take account of this situation and ensure that **"no one is left behind"**, insisting that the SDG indicators report is necessarily broken down by income, gender, age, race, ethnicity and geographical location, in line with the attributes that demand compliance with the human rights to water and sanitation.

In this sense, the results of this study show that a significant proportion of the Latin American and Caribbean population still lacks adequate access to water and sanitation services. Only 65% of the population has access to safely managed water services, a percentage lower than that reported worldwide, which is 71%. With regard to safely managed sanitation services, the situation is even more critical, with an access level of 39% worldwide being reported, compared to 22% in our Region. It also reveals major inequalities in access to water and sanitation services that persist in our Region: inequalities between countries and subregions and limited information that compromises compliance and monitoring of Human Rights to water and sanitation, in a differentiated manner and in each country.

PAHO recognizes that the implementation of public policies that adopt the human rights approach is important to ensure that people live healthy and dignified lives through secure access to water and sanitation services. Therefore, it expects governments to strengthen their Public Health Strategies and Policies by incorporating Water and Sanitation as basic elements for disease prevention. We hope this Document, which the Pan American Health Organization makes available to the public, contributes to mobilize efforts to prioritize and reduce inequalities in access to drinking water and sanitation in the countries of our Region.

Marcos Espinal
Director of the Department of Communicable Diseases and Environmental Determinants of Health

ACKNOWLEDGMENTS

This report was prepared under the general supervision of Dr. Teófilo Monteiro, Coordinator of the Regional Technical Team for Water and Sanitation (ETRAS) of the Pan American Health Organization with technical support from Engineer Rosa Maria Alcayhuamán and Economist Hildegardi Venero and managerial support from Miss. Cecilia Barrios - ETRAS-PAHO, who all made their contributions, observations and suggestions to improve this publication.

Our special acknowledgment to Dr. Léo Heller, technical report coordinator (UN Special Rapporteur on the Human Right to Drinking Water and Sanitation, and researcher at the René Rachou Institute/FIOCRUZ) and the execution team, composed of Rodrigo Coelho de Carvalho (René Rachou Institute/FIOCRUZ) and Vítor Carvalho Queiroz (René Rachou Institute/FIOCRUZ) and the Advisory Committee, composed of Josiane Matos de Queiroz, Maria Inês Pedrosa Nahas, Matheus Valle de Carvalho Oliveira and Priscila Neves Silva, who, with their experience and knowledge produced this valuable regional study.

1 Environmental Gradients and Health Inequalities in the Americas' Access to Water and Sanitation as Determinants of Health, OPS, 2016

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1 | INTRODUCTION

This report is the result of a cooperation between the Oswaldo Cruz Foundation (Fiocruz) and the Pan American Health Organization (PAHO), carried out through ETRAS (Regional Water and Sanitation Technical Team). It aims to deepen the understanding of the most recent stage of compliance with the Sustainable Development Goals (SDG) related to drinking water, sanitation and hygiene (WASH) in the countries of Latin America and the Caribbean. This report assumed this challenge using a methodology based on the Human Rights to Safe Drinking Water and Sanitation (HRWS) analytical framework.

The Sustainable Development Goals are a set of 17 global targets incorporated into the United Nations (UN) 2030 Agenda, signed at the UN Sustainable Development Summit in 2015. It is a strongly human rights-oriented agenda, which is clearly expressed in the topics related to WASH: the introductory document of the agenda[2] explicitly refers to "a world where we reaffirm our commitments regarding the human rights to safe drinking water and sanitation, where there is improved hygiene...". At the same time, the 2030 Agenda establishes a Goal specifically dedicated to this matter, the SDG 6: the need to "ensure availability and sustainable management of water and sanitation for all". The SDG 6 comprises eight targets, the first two being of particular interest for the purposes of this report and targets 6a and 6b referring to means of implementation (see Box).

2030 AGENDA FOR SUSTAINABLE DEVELOPMENT

Objetivo 6: Asegurar la disponibilidad y la gestión sostenible del agua y el saneamiento para todos

Goal 6. Ensure availability and sustainable management of water and sanitation for all

6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all

6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations

6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally

6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity

6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate

2 Transforming our world: the 2030 Agenda for Sustainable Development (A/RES/70/1)

6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

6.a By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies

6.b Support and strengthen the participation of local communities in improving water and sanitation management

The Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs) [3] created a set of global indicators for monitoring and evaluating the compliance with targets 6.1 and 6.2, the following ones being the most relevant for this report:

- 6.1.1: "Proportion of population using safely managed drinking water services";
- 6.2.1a: "Proportion of population using safely managed sanitation services";
- 6.2.1b: "Proportion of population using a handwashing facility with soap and water."

By comparing the indicators with their respective targets, it can be inferred that the expression "safely managed", used both for drinking water and sanitation, was the concise form to encompass the different attributes of the targets in the indicators. Thus, a "safely managed" drinking water service would be the one that ensures universal, equitable access to safe and affordable drinking water for all. Similarly, "safely managed" sanitation services should be those which ensure adequate and equitable sanitation for all, aiming to end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations. In regard to hygiene, it is assumed that, although the target has been converted to "handwashing facility with soap and water", this proxy should be able to represent "adequate and equitable access to hygiene for all".

The formulation of targets 6.1 and 6.2 are related to different concepts of the HRWS definition, as can be seen in the General Comment No.15 4 of the Resolution 64/292 of 2010 5 adopted by the United Nations General Assembly and subsequent resolutions of the General Assembly and Human Rights Council 6. Therefore, for different reasons, the SDGs targets regarding water and sanitation are related to the human rights' analytical framework, which poses the challenge of aligning the global, regional and national monitoring of targets with this framework.

This report seeks to provide the most up-to-date overview of the SDG targets 6.1 and 6.2 situation in Latin America and the Caribbean. Besides outlining the general situation of countries, it presents some elements regarding human rights and the targets 6.1 and 6.2 that have been neglected in the initial monitoring of the 2030 Agenda, above all, the dimensions of **inequality** and **affordability**.

The report is divided into eight chapters, including this Introduction. Chapter 2 provides an overview of the access to WASH services in the countries and sub-regional blocks of Latin America and the Caribbean based on the definitions of the Joint Monitoring Programme for Water Supply, Sanitation and Hygiene - JMP (WHO/UNICEF/JMP, 2017) [7]. In Chapter 3, these same aspects are evaluated in the light of inequalities between different population subgroups and a proposal of adjustment in the levels of access based on the degree of inequality is outlined. Chapter 4 aims to move forward the discussion about WASH services affordability, in accordance with the target 6.1. Chapter 5 explores the political and institutional conditions of Latin American and Caribbean countries that can potentially create an enabling environment to meet the SDG 6 targets. Chapter 6 focuses on the association between the stage of compliance with SDG 6 targets and institutional aspects regarding WASH services. Chapter 7 presents four case studies, one per sub-regional block, with a more detailed characterization of the national and subnational situations of Colombia, Brazil, Mexico, and the Dominican Republic. Finally, in Chapter 8, the main conclusions and some recommendations inspired by the lessons learned in the preparation of this report are presented.

3 Inter-Agency and Expert Group on SDG Indicators (https://unstats.un.org/sdgs/iaeg-sdgs/)
4 General Comment No. 15. The right to water (Arts. 11 and 12 of the Arrangement). UN Committee on Economic, Social and Cultural Rights (CESCR). 2003.
5 Human Right to Water and Sanitation (HRWS). Resolution A/RES/64/292, United Nations General Assembly, 28 July 2010, adopted with 123 votes in favor and 41 abstentions.
6 See https://www.ohchr.org/EN/Issues/WaterAndSanitation/SRWater/Pages/Resolutions.aspx.
7 WHO/UNICEF/JMP. Progress on Drinking Water, Sanitation and Hygiene. Update and SDG Baselines. 2017

2 | ACCESS TO WASH SERVICES

2.1. | Access to drinking water, sanitation and hygiene in households

The goal of this chapter is to evaluate the access to WASH services in the Latin American and Caribbean countries and sub-regional blocks according to the methodology proposed by the JMP. The 2017 JMP report established a new classification for WASH services (WHO/UNICEF/JMP, 2017), outlining the baseline for the SDG period and adding new evaluation criteria in view of the new SDG definitions. The SDG indicators regarding drinking water and sanitation adopt the "safely managed" concept, which should include the attributes present on their respective targets: access to universal, equitable, safe and affordable drinking water and access to adequate and equitable sanitation and hygiene for all. It refers to a superior level of access in comparison to the definition of "improved sources" adopted during the Millennium Development Goals (MDG) period. To define the level of access, the JMP uses "service ladders" as a reference to evaluate, monitor and compare progress between countries, as shown in Tables 1 to 3. In the estimations of access to safely managed drinking water services, the concept of "improved facilities" is combined with the attributes of *accessibility, availability and quality of water*. In the estimations of access to safely managed sanitation services, information on the use of different types of improved facilities is combined with data on *containment, emptying, transport and treatment* of excreta. The definitions of other service levels are based on the criteria summarized in the respective tables.

SERVICE LEVEL	DEFINITION
SAFELY MANAGED	Drinking water from an improved water source that is located on premises, available when needed and free from faecal and priority chemical contamination
BASIC	Drinking water from an improved source, provided collection time is not more than 30 minutes for a round trip, including queuing
LIMITED	Drinking water from an improved source for which collection time exceeds 30 minutes for a round trip, including queuing
UNIMPROVED	Drinking water from an unprotected dug well or unprotected spring
SURFACE WATER	Drinking water directly from a river, dam, lake, pond, stream, canal or irrigation canal
Note: Improved sources include: piped water, boreholes or tubewells, protected dug wells, protected springs, and packaged or delivered water.	

Table 1 – JMP ladder for drinking water services
Source: WHO/UNICEF/JMP (2017)

NIVEL DEL SERVICIO	DEFINITION
SAFELY MANAGED	Use of improved facilities that are not shared with other households and where excreta are safely disposed of in situ or transported and treated offsite
BASIC	Use of improved facilities that are not shared with other households
LIMITED	Use of improved facilities shared between two or more households
UNIMPROVED	Use of pit latrines without a slab or platform, hanging latrines or bucket latrines
OPEN DEFECATION	Disposal of human faeces in fields, forests, bushes, open bodies of water, beaches or other open spaces, or with solid waste
Note: improved facilities include flush/pour flush to piped sewer systems, septic tanks or pit latrines; ventilated improved pit latrines, composting toilets or pit latrines with slabs.	

Table 2 - JMP ladder for sanitation services
Source: WHO/UNICEF/JMP (2017)

A ladder with only three steps was proposed for hygiene, simply referring to the existence of a handwashing facility on premises[8] and the availability of soap and water.

SERVICE LEVEL	DEFINITION
BASIC	Availability of a handwashing facility on premises with soap and water
LIMITED	Availability of a handwashing facility on premises without soap and water
NO FACILITY	No handwashing facility on premises

Table 3 - JMP ladder for hygiene
Source: WHO/UNICEF/JMP (2017)

Table 4 shows the JMP classifications for the *type of facilities* of water and sanitation, used in the service ladders.

8 Handwashing facilities may be fixed or mobile and include a sink with tap water, buckets with taps, tippy-taps, and jugs or basins designated for handwashing. Soap includes bar soap, liquid soap, powder detergent, and soapy water but does not include ash, soil, sand or other handwashing agents. (WHO/UNICEF JMP, 2017).

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	DRINKING WATER	SANITATION
IMPROVED FACILITIES	Piped supplies • Tap water in the dwelling, yard or plot • Public standposts Non-piped supplies • Boreholes/tubewells • Protected wells and springs • Rainwater • Packaged water, including bottled water and sachet water • Delivered water, including tanker trucks and small carts	Networked sanitation • Flush and pour flush toilets connected to sewers On-site sanitation • Flush and pour flush toilets or latrines connected to septic tanks or pits • Ventilated improved pit latrines • Pit latrines with slabs • Composting toilets, including twin pit latrines and container-based systems
UNIMPROVED FACILITIES	Non-piped supplies • Unprotected wells and springs	On-site sanitation • Pit latrines without slabs • Hanging latrines • Bucket latrines
NO FACILITIES	Surface water	Open defecation

Table 4 - JMP classification of improved and unimproved facility types
Source: WHO/UNICEF/JMP (2017)

Although the new criteria for defining the level of services are necessary to monitor the standards set by the SDG targets, unfortunately, only a few countries in Latin America and the Caribbean have enough data to measure the proportion of population with access to safely managed services – the highest level of the service ladders. In the case of drinking water, the greatest difficulty is the lack of information on availability ("water available when necessary") and quality ("absence of fecal or chemical contamination"). In the case of sanitation, the greatest challenge is the lack of information about disposal and treatment of excreta. The situation is particularly problematic for hygiene services, as most countries do not have surveys that collect data on this subject. In this report, countries and sub-regional blocks are analyzed in the greatest detail allowed by the data, which is often the "at least basic" level (which refers to either basic or safely managed services).

Figure 1 shows the JMP estimates of access to at least basic drinking water and sanitation services in the four sub-regional blocks of Latin America and the Caribbean[9]. In regard to drinking water, 86% of the Caribbean population had access to at least basic services in 2015, while all other blocks had access levels above 95 percentage points. In the case of sanitation services, this gap is even larger (71 and 89%, respectively). In both types of services, the South Cone presented the highest level of coverage of at least basic services.

9 All JMP estimates presented in this report are available at https://washdata.org.
JMP estimates are based on the minimum value of these criteria or, when there are rural and urban estimates, a weighted average of these populations. Estimates are made only if data are available for at least 50% of the relevant population. To calculate safely managed drinking water services estimates, the JMP uses data about accessibility, availability and quality. To calculate safely managed sanitation services, JMP makes national estimates only if information on either wastewater treatment or management of on-site sanitation for the dominant type of sanitation system is available. If no information is available for the non-dominant type of sanitation system the JMP assumes that 50 per cent is safely managed (WHO / UNICEF / JMP, 2017).

The Caribbean block had the lowest level of access to at least basic drinking water and sanitation services and the South Cone, the highest.

Figure 1 - Proportion of population using at least basic drinking water services (1st map) and sanitation services (2nd map), 2015
Source: Based on WHO/UNICEF/JMP (2017)

Figures 2 and 3 present the same data in a higher level of spatial disaggregation and show a significant heterogeneity within the sub-regional blocks. North and Central America showed the greatest inequalities between countries: in relation to drinking water, while the population of Costa Rica had nearly universal access to at least basic services, the neighboring country Nicaragua had a proportion of 82 percentage points. The contrast between these countries was even more pronounced in the access to at least basic sanitation services: 97 in Costa Rica and 76 in Nicaragua. The Caribbean block also presented significant inequalities, especially regarding at least basic sanitation services. While Cuba, French Guiana and Puerto Rico had access levels exceeding 90 percentage points in 2015, Haiti had only 31. Bolivia, despite having an access level to sanitation services far superior to Haiti, also stood out negatively in the Andean block (only 53). In the South Cone, Chile, Argentina and Uruguay stand out because of the high coverage of at least basic services of both drinking water and sanitation.

Haiti had the lowest level of access to at least basic drinking water and sanitation services among all countries of Latin America and the Caribbean.

Figure 2 - Proportion of national population using at least basic drinking water services, 2015
Source: Based on WHO/UNICEF/JMP (2017)

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Bolivia had the lowest coverage of at least basic sanitation services a South American countries (53%), 23 percentage points lower than which occupies the second worst position in the region.

Figure 3 - Proportion of national population using at least basic sanitation services, 2015
Source: Based on WHO/UNICEF/JMP (2017)

As previously mentioned, few countries collect data on hygiene services or facilities. In this sense, countries of the Caribbean and North and Central America are exceptions due to the latest editions of DHS (*Demographic and Health Survey*)[10] and MICS (*The Multiple Indicator Cluster Surveys*) [11] carried out in the region. These data are represented in the map of Figure 4, which also shows great inequalities between countries. Haiti, Dominican Republic and Jamaica (in that order) had the lowest levels of access to basic handwashing facilities, while El Salvador, Mexico and Belize (in that order) had the highest levels.

10 Additional information available at https://dhsprogram.com.
11 Additional information available at http://mics.unicef.org.

Only 14 countries in Latin America and the Caribbean have available data on access to basic handwashing facilities.

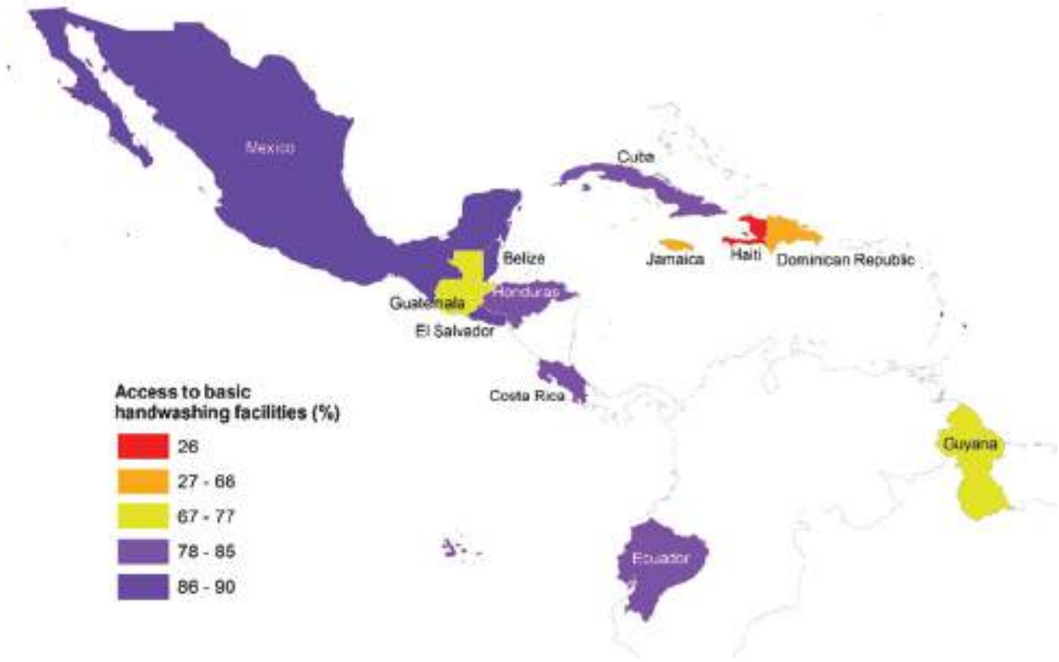

Figure 4 - Proportion of national population using basic handwashing facilities, 2015
Source: Based on WHO/UNICEF/JMP (2017)

Figures 5 and 6 show, respectively, the proportion of population with access to safely managed drinking water and sanitation services in 2015, including the few countries that have available information for the highest level of the JMP service ladders. Both figures show that the coverage of safely managed services was lower in Latin America and the Caribbean than the world average. The gap in sanitation services was particularly large, reaching 17 percentage points (considering countries as a whole, that is, without disaggregating urban and rural areas). However, analyzing countries separately, it can be noted that several had higher coverage than the world average, as is the case of Argentina and Costa Rica in the case of drinking water services, Uruguay, French Guiana and Mexico in the case of sanitation services and Chile and Ecuador in both services.

The patterns shown in these maps are approximately the same observed in the maps regarding at least basic services, but some differences are worth highlighting. Mexico, for example, which had a relatively high coverage of at least basic drinking water services for the North and Central American block, had an access level to safely managed services considerably lower than Costa Rica, Guatemala and Nicaragua. Additionally, the inequalities between rural and urban areas in the four countries that have this information available shows how important this type of disaggregation is. In regard to sanitation services, Chile presented a great advantage both in relation to the world average and in relation to other countries of the South Cone, particularly Argentina and Uruguay. The similarity of these countries with Chile in relation to at least basic sanitation services indicates the importance of assessing management of water and sanitation services in greater detail, under the risk of masking important differences in the quality of provided services.

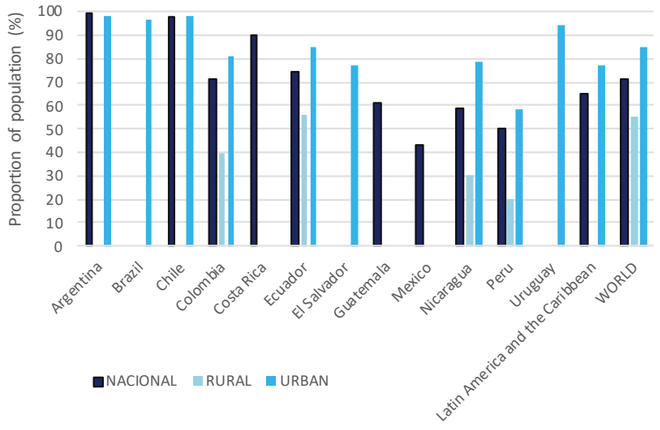

Figure 5 - Proportion of national population using safely managed drinking water services, 2015
Source: WHO/UNICEF/JMP (2017)

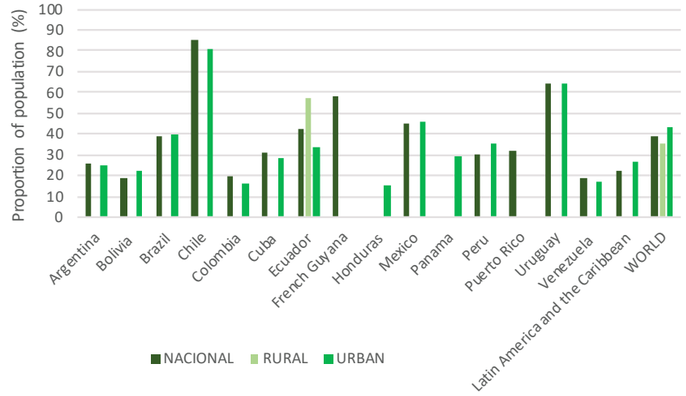

Figure 6 - Proportion of national population using safely managed sanitation services, 2015
Source: WHO/UNICEF/JMP (2017)

Figures 7, 8 and 9 show complementary information on the previously presented JMP estimates, covering some of the attributes used to conceptualize the WASH service ladders. As data were extracted from different household surveys, it is important to consider the reference year when comparing countries[12]. Except for Venezuela, Nicaragua and Bolivia, all surveys were performed after 2010. The most recent editions of DHS and MICS surveys were used, establishing the year 2000 as a threshold - the same used in the latest JMP global report (WHO / UNICEF / JMP, 2017).

Figure 7 shows the proportion of population without water on premises and the time spent to get to the water source and return, two of the criteria considered in the definition of drinking water service levels. Some countries show a worrying picture, like Haiti, which presents a particularly serious situation: 91% of its population had no water on premises in 2012 and more than half spent more than 30 minutes to get water and return. In the North and Central America block, Nicaragua had the worst scenario (the second worst among all countries considered): 27% of its population had no water on premises in 2001 and, among them, 28% spent more than 30 minutes to fetch water (however, it is worth reminding that data on Nicaragua and Venezuela are considerably outdated in comparison with the other countries). Among Andean countries, Peru presented the worst scenario: one fifth of its population had no water on premises in 2012 and, among them, 27% spent more than 30 minutes to get to the water source and return. In the South Cone, only Paraguay and Uruguay have available data, which indicate a situation of wide access to drinking water on household premises in both countries.

12 Producing national estimates for the same year through projections or back projections was not possible, as it would require data from the same surveys for at least two distinct time periods.

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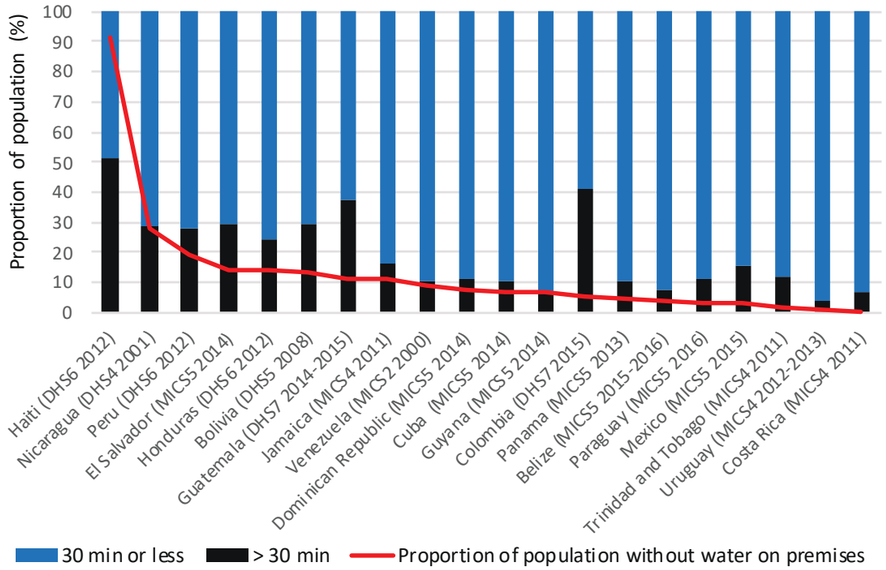

Figure 7 – Proportion of population without water on premises and time (in minutes) to get to water source and come back
Source: DHS and MICS.
Note: Only valid answers were considered, that is, missing values and "do not know" responses were disregarded. In cases where the time taken to reach the water source was asked (i.e., regardless of the round-trip time), the 15-minute limit was considered as equivalent to 30 minutes to get to the water source and return. This implies disregarding queuing time, which may lead to underestimation of the total time spent fetching water. This is the case of Bolivia, Colombia, Guatemala, Honduras, Haiti, Nicaragua, Peru and El Salvador.

Figure 8 shows the proportion of population with access to sanitation facilities, distinguishing exclusive facilities from those shared with other households. The importance of this disaggregation lies in the fact that this criterion is used to distinguish "basic" and "limited" sanitation services in the JMP classification. Once again, Haiti presented the worst situation in the Caribbean. In this country, 26% of the population did not have access to toilets in 2012 and 42% of the population that had this access shared facilities with members of other households, the highest proportion among all countries considered. In the Andean block, Bolivia was the only country to present an even higher proportion of population without access to toilets (28%), although the time lag of four years between the two surveys should be considered. Among the Bolivian population with access to toilets, about one-fifth shared facilities with members of other households (a proportion much lower than of Haiti). Among the North and Central American countries, Nicaragua (which has the most outdated data in the block) had the highest proportion of population without access to toilets (16 percentage points), followed by Honduras (11.4). In this same block, Guatemala had the highest proportion of users of shared facilities (13.7). In the South Cone, only Paraguay and Uruguay had available information. In both, data show a better situation, with less than 1% of the population without access to toilets and less than 5% sharing facilities.

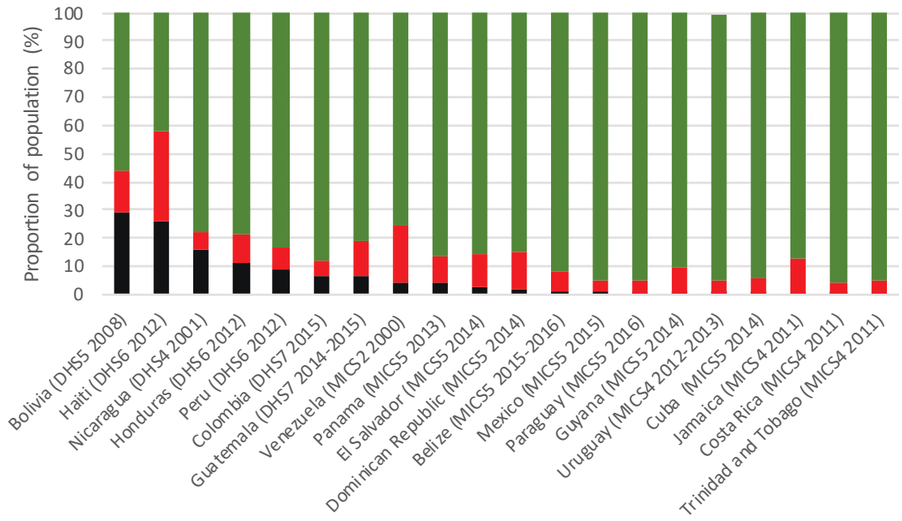

Figure 8 – Proportion of population with access to shared or exclusive toilet facility (%)
Source: DHS and MICS.

Figure 9 includes information regarding all attributes used in the JMP hygiene ladder, but in a disaggregated form: presence of handwashing facilities and availability of water, soup or detergent. It is complementary to the map in Figure 4, which shows the JMP estimates of basic access to handwashing facilities for the year 2015, combining the three pieces of information. All data comes from recent surveys, from 2011 onwards, even though not referring to the same year. The Dominican Republic and Haiti had the lowest coverage of hygiene facilities among all countries considered, both with about 75% access (however, it is worth mentioning that the Dominican Republic had the highest proportion of missing data: about one-third of the survey participants did not respond to the question or did not allow the interviewers to observe the facilities). On the other hand, the availability of water and soap or detergent in the Dominican Republic were significantly higher compared to Haiti (but lower than the average of the other countries). In the North and Central America block, Belize had the highest proportion of population with access to facilities (99.1 percentage points), followed closely by Costa Rica (98.9) and El Salvador (98.7). Paraguay, the only representative of the South Cone, had a relatively high proportion of access to facilities, availability of water and soap or detergent. No information is available for Andean countries in the surveys analyzed (DHS and MICS).

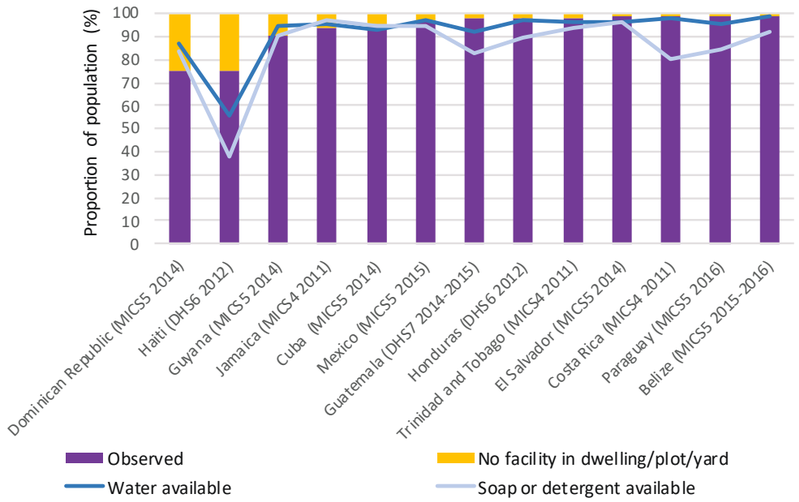

Figure 9 - Proportion of population with access to handwashing facilities including soap or detergent
Source: DHS and MICS.

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2.2 | Access to drinking water, sanitation and hygiene in schools

The Sustainable Development Goals (SDG) targets related to WASH aims to achieve "universal access" by 2030, which includes not only households, but also schools, health care facilities, workplaces and other public spaces where people live or spend much of their lifetimes. For this reason, in 2018, JMP launched a global report on the access to WASH services exclusively in schools and a new round of related publications including other institutional settings is being prepared [13]. Table 5 shows the JMP service ladders specifically created for WASH in schools:

SERVICE LEVEL	DRINKING WATER	SANITATION	HYGIENE
BASIC SERVICE	Drinking water from an improved source and water is available at the school at the time of the survey	Improved sanitation facilities at the school that are single-sex and usable (available, functional and private) at the time of the survey	Handwashing facilities with water and soap available at the school at the time of the survey
LIMITED SERVICE	Drinking water from an improved source but water is unavailable at the school at the time of the survey	Improved sanitation facilities at the school that are either not single-sex or not usable at the time of the survey	Handwashing facilities with water but no soap available at the school at the time of the survey
NO SERVICE	Drinking water from an unimproved source or no water source at the school	Unimproved sanitation facilities or no sanitation facilities at the school	No handwashing facilities available or no water available at the school

Table 5 - JMP service ladders for monitoring WASH in schools
Source: WHO/UNICEF/JMP (2018)

The biggest challenge in producing estimates of access to WASH services in schools is, once again, the lack of data: by 2016, only 68 countries around the world had national statistics for basic drinking water, sanitation and hygiene services in schools. The most recent JMP estimates for Latin American and Caribbean countries are presented below, whenever possible, for the three levels of the ladder. As few countries have such information disaggregated for urban and rural areas, this distinction was made only for schools without WASH services.

13 WHO/UNICEF/JMP. **Drinking water, sanitation and hygiene in schools: global baseline report. 2018.**

Figure 10 shows estimates of the proportion of schools using different levels of drinking water services (reference years are indicated in the chart). Among the countries evaluated, the Caribbean Barbados, Dominica and Saint Lucia had the highest proportions of access to basic services - practically universal - and Ecuador, Colombia and Honduras, the lowest. Ecuador, despite having the lowest coverage of services of this level, exhibited a proportion of schools without drinking water services well below average. In this sense, the worst cases were observed in Colombia, Honduras and Peru, where more than one fifth of the schools had no access to drinking water services. Figure 11 shows estimates disaggregated by urban and rural areas, revealing significant inequalities. Considering Latin America and the Caribbean as a whole, there is a difference of 26 percentage points between urban and rural schools without services, about 10 points higher than the world average. Among all countries considered, the greatest inequalities were observed in Colombia and Brazil, where the difference between urban and rural areas exceeded 40 percentage points.

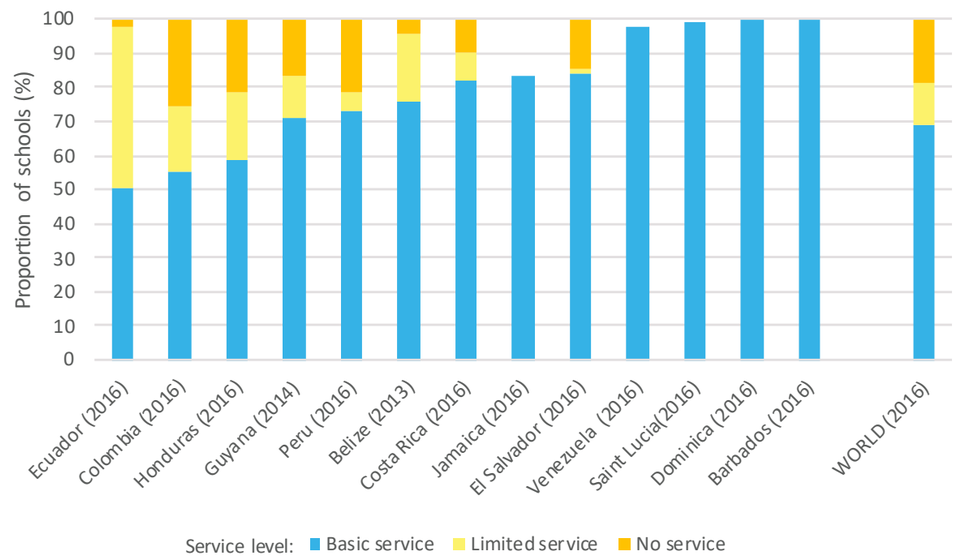

Figure 10 - Proportion of schools using different levels of drinking water services (most recent estimates)
Source: WHO/UNICEF/JMP (2018)
Note: Jamaica, Venezuela and Saint Lucia have estimates available only for the basic level.

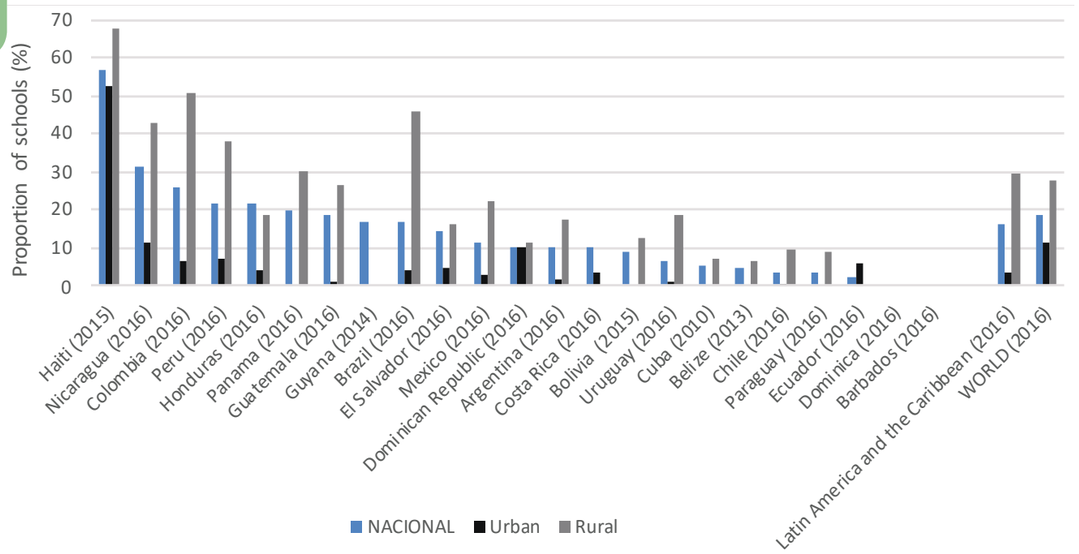

Figure 11 - Proportion of schools without drinking water services by rural-urban status (most recent estimates)
Source: WHO/UNICEF/JMP (2018)
Note: Guyana, Dominica and Barbados have estimates available only for the national level and, in the latter two countries, the proportion of schools without services was 0%.

Figure 12 shows that not even half of the schools in Guyana, Nicaragua and Belize had access to basic sanitation services. On the other hand, schools in the Caribbean countries of Barbados, Dominica and Saint Lucia had nearly universal access to these services. Considering Latin America and the Caribbean as a whole, about 78% of schools had access to basic services, more than 12 percentage points higher than the world average. In regard to the number of schools without services, Latin America and the Caribbean also presented a relatively positive situation: while in this region 8.2% of schools had no access to sanitation services in 2016, the world average reached 22.6%.

Figure 13 suggests that inequalities in the access to basic sanitation services in urban and rural schools were lower than drinking water services. Considering Latin America and the Caribbean as a whole, the gap between urban and rural schools without access to sanitation services was just over 6 percentage points. Among the few countries with disaggregated estimates, the greatest inequalities were observed in El Salvador, Haiti and Bolivia, with gaps higher than 10 percentage points.

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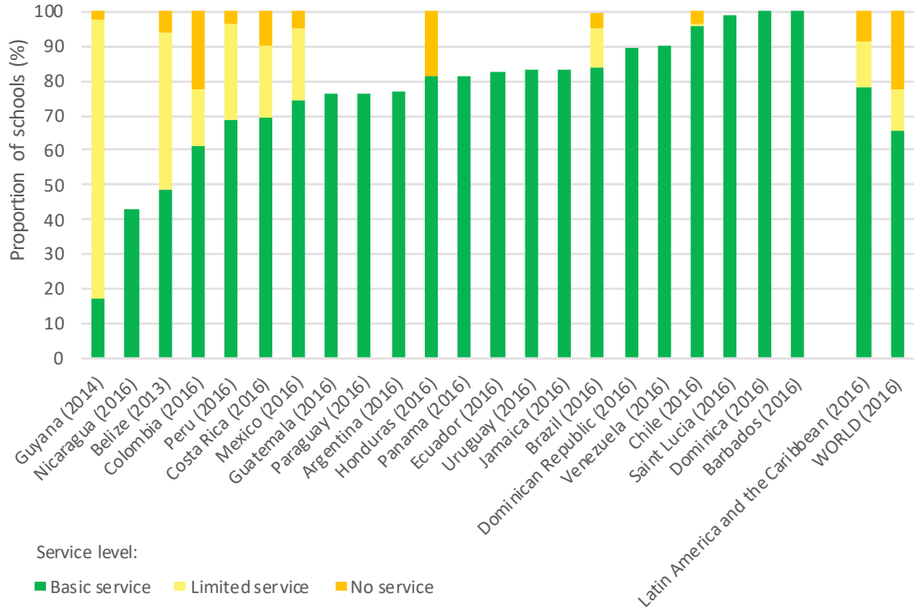


Figure 12 - Proportion of schools using different levels of sanitation services (most recent estimates)
Source: WHO/UNICEF/JMP (2018)

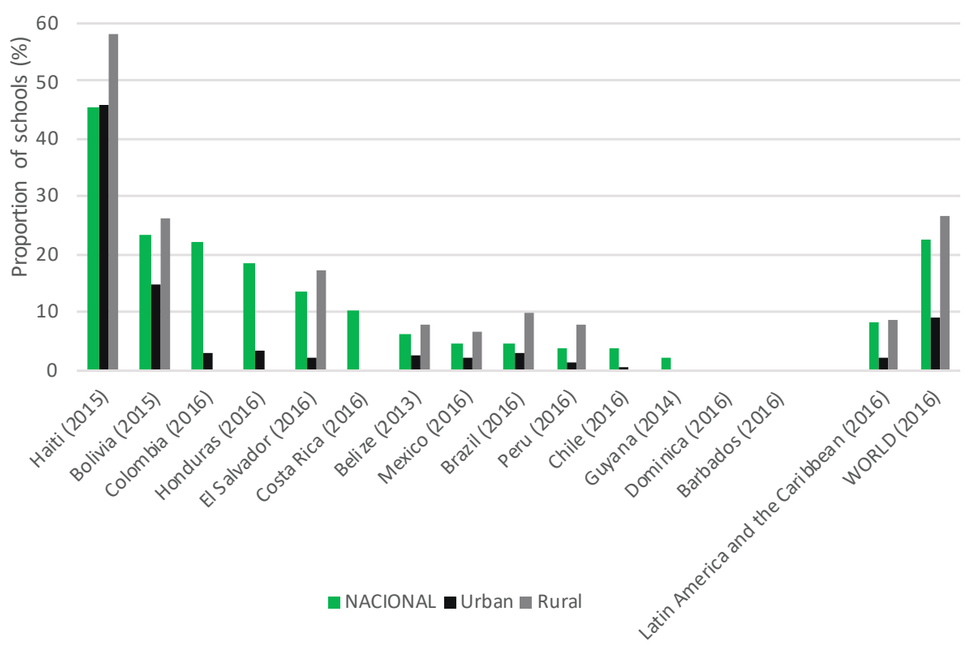
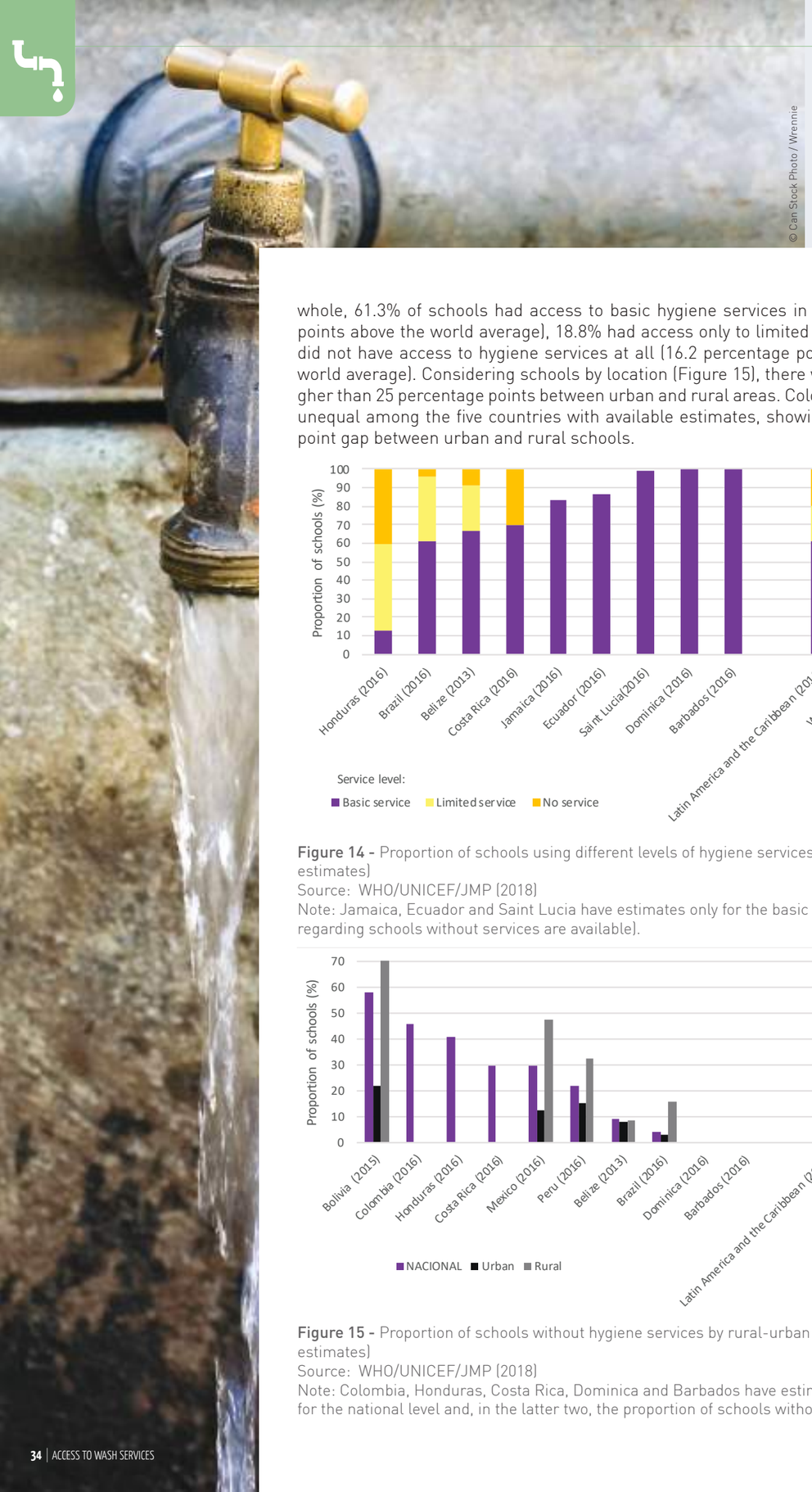


Figure 13 - Proportion of schools without sanitation services by rural-urban status (most recent estimates)
Source: WHO/UNICEF/JMP (2018)
Note: Costa Rica, Dominica and Barbados have estimates available only for the national level and, in the latter two, the proportion of schools without services was 0%. Colombia, Honduras and Chile have no estimates available for rural areas.

Figure 14 represents the nine countries with estimates of the proportion of schools with access to basic hygiene services. Honduras had a level of access much lower than the other countries (12.5%), followed by Brazil, Belize and Costa Rica, which ranged from 60 to 70%. Considering the region of Latin America and the Caribbean as a



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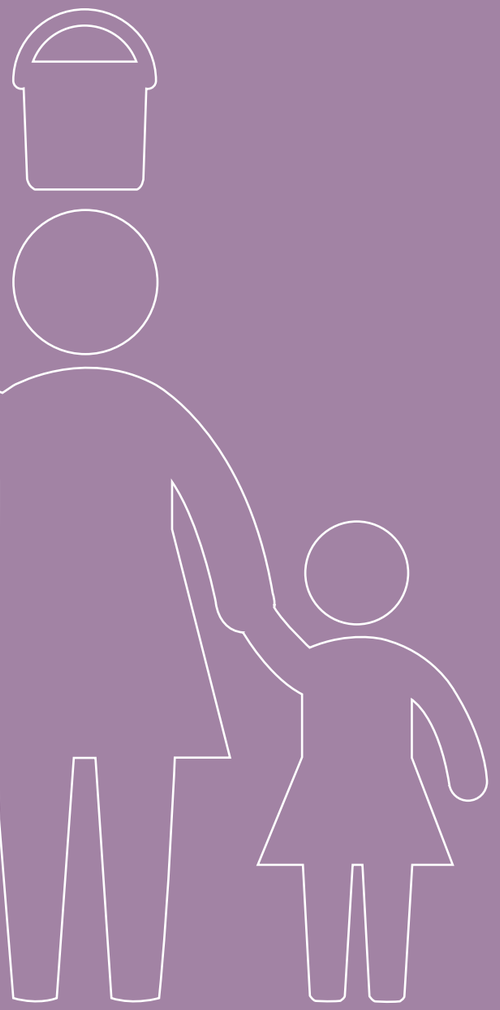
whole, 61.3% of schools had access to basic hygiene services in 2016 (8 percentage points above the world average), 18.8% had access only to limited services and 19.9% did not have access to hygiene services at all (16.2 percentage points lower than the world average). Considering schools by location (Figure 15), there was a difference higher than 25 percentage points between urban and rural areas. Colombia was the most unequal among the five countries with available estimates, showing a 48-percentage point gap between urban and rural schools.

Figure 14 - Proportion of schools using different levels of hygiene services (most recent estimates)
Source: WHO/UNICEF/JMP (2018)
Note: Jamaica, Ecuador and Saint Lucia have estimates only for the basic level (no information regarding schools without services are available).

Figure 15 - Proportion of schools without hygiene services by rural-urban status (most recent estimates)
Source: WHO/UNICEF/JMP (2018)
Note: Colombia, Honduras, Costa Rica, Dominica and Barbados have estimates available only for the national level and, in the latter two, the proportion of schools without services was 0%.



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3 | INEQUALITIES IN THE ACCESS TO WASH SERVICES

One of the major challenges faced in the study of inequalities in the access to WASH services is data availability. Information and estimates often do not allow disaggregation of data by population subgroups, which is essential for comparing the most vulnerable groups with the general population. For this reason, a broad research on databases that allowed such disaggregation was carried out for the execution of this report. In addition to the JMP's own estimates, DHS, MICS and the harmonized censuses databases provided by the IPUMS-International project [14] were used.

3.1 | Monitoring inequalities by population sub-groups

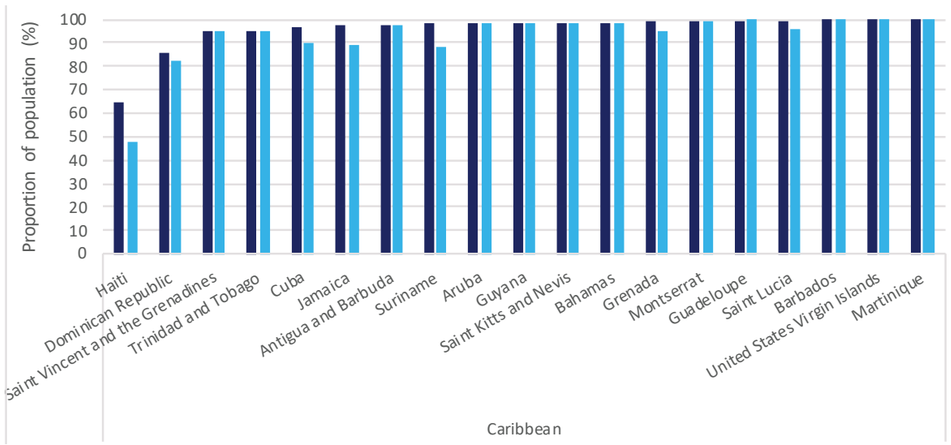
Figures 16 and 17 show, respectively, the proportion of population using improved drinking water and sanitation facilities in the countries of Latin America and the Caribbean in 2015, disaggregated by urban and rural areas. It is worth remembering that the type of facility is the first classification criterion used by JMP to define the service level in the drinking water and sanitation ladders. The figures show that coverage of improved drinking water facilities was far superior to the coverage of improved sanitation facilities and that the differences in access between urban and rural areas tended to be lower for the former.

Figure 16 shows that the smallest islands in the Caribbean, such as Martinique, United States Virgin Islands, Barbados, Saint Lucia and Guadeloupe, had nearly universal access to improved drinking water facilities, thus showing no inequalities between rural and urban areas. Haiti, besides having the lowest coverage (followed by the Dominican Republic), exhibited the greatest inequality between urban and rural areas in the Caribbean block. All countries of the South Cone presented levels of coverage higher than the average of Latin America and the Caribbean, with nearly universal access in urban areas. Except for Argentina, coverage in rural areas was considerably lower, with Brazil showing the highest degree of inequality (a gap of 13 percentage points). Peru had the lowest levels of access in both urban and rural areas in the Andean block, while Venezuela had the highest coverage, considering the national estimate. The Andean block had the greatest inequality levels between urban and rural areas, ranging from 17 to 23 percentage points. Among all countries considered, only Nicaragua had a level of inequality greater than the Andean countries - almost 30 percentage points (the worst performance in the block). Belize exhibited the best

14 Minnesota Population Center (MPC). Integrated Public Use Microdata Series, International: Version 7.0 [dataset]. Minneapolis, MN: IPUMS, 2018.

The goals of the IPUMS-International, coordinated by the Minnesota Population Center (MPC), are to collect, distribute census data from several countries (including the majority of Latin America and Caribbean countries), harmonize variables and disseminate the harmonized data free of charge. For this report, three variables from the most recent censuses available were selected: one related to water supply and two related to sanitation. The variable "water supply" describes the physical means by which the housing unit receives its water. The primary distinction is whether or not the household had piped (running) water. The variable "sewage" indicates whether the household has access to a sewage system or septic tank. At last, the variable "toilet" indicates whether the household had access to a toilet and, in most cases, whether it was a flush toilet or other type of installation. Further information available at https://www.ipums.org/.

estimates among North and Central American countries with nearly universal access to improved drinking water facilities in urban and rural areas.



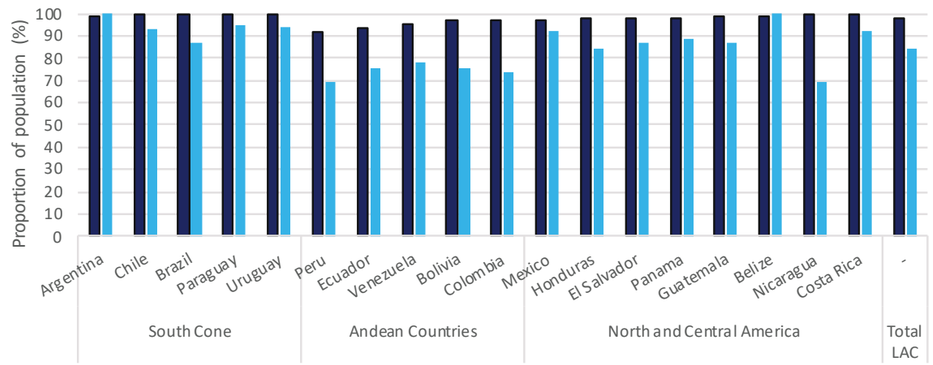


Figure 16 - Proportion of population using an improved drinking water source in 2015, urban and rural areas
Source: WHO/UNICEF/JMP (2017) (extracted from CEPALSTAT)

Figure 17 shows that some of the smaller islands in the Caribbean (such as Puerto Rico, Aruba, Grenada and the British Virgin Islands) also had a higher coverage of improved sanitation facilities than the Latin American and Caribbean average. In the Caribbean block, Haiti presented a coverage level substantially lower than all other countries while Suriname had the largest difference between urban and rural areas. In the South Cone, Chile had the highest coverage. Brazil, in addition to having the lowest coverage in the block, in both urban and rural areas, presented the highest inequality level among all countries considered, with a difference of 36 percentage points. In the Andean block, Bolivia had the lowest coverage in both urban and rural areas. Considering national estimates, Venezuela had the highest coverage. However, considering access by location, this country had a great difference between urban and rural areas, of 27 percentage points. In North and Central America, considering national estimates, Costa Rica had the best estimates and Guatemala, the worst, including the highest level of inequality in the block.

Figure 17 - Proportion of population using an improved sanitation facility in 2015, urban and rural areas
Source: WHO/UNICEF/JMP (2017) (extracted from CEPALSTAT)

Figures 18 to 32 show the latest census data from the Latin American and Caribbean countries provided by IPUMS-International. It is important to highlight that the direct comparison between countries is compromised by the fact that the censuses were carried out in different years. In addition, due to the low representativeness of some blocks - particularly the South Cone – no comparisons between them were made. Figures 18 to 20 compare levels of access to piped water, sewage systems or septic tanks and to toilets by residents of households according to their rural-urban status. The charts illustrate profound inequalities between urban and rural areas. The average difference in piped water coverage was 32 percentage points. In Peru and Nicaragua, this difference exceeded 50 percentage points. Even in countries with relatively high coverage for the region, such as Chile and Panama, the spread in coverage between urban and rural areas was more than 20 percentage points. The average difference in the access to sewage systems or septic tanks was even higher, with a 45.1 percentage point gap between urban and rural areas. In several countries (Paraguay, Brazil, El Salvador, Bolivia and Panama), this difference exceeded 50 percentage points, reaching 70 in Peru. Finally, inequalities regarding access to toilets were less pronounced, with an average difference of 19 percentage points. Even so, significant gaps were observed, such as in Bolivia, which showed the highest difference between urban and rural areas (47 percentage points), followed by Venezuela (36), Peru (32) and Haiti (30).

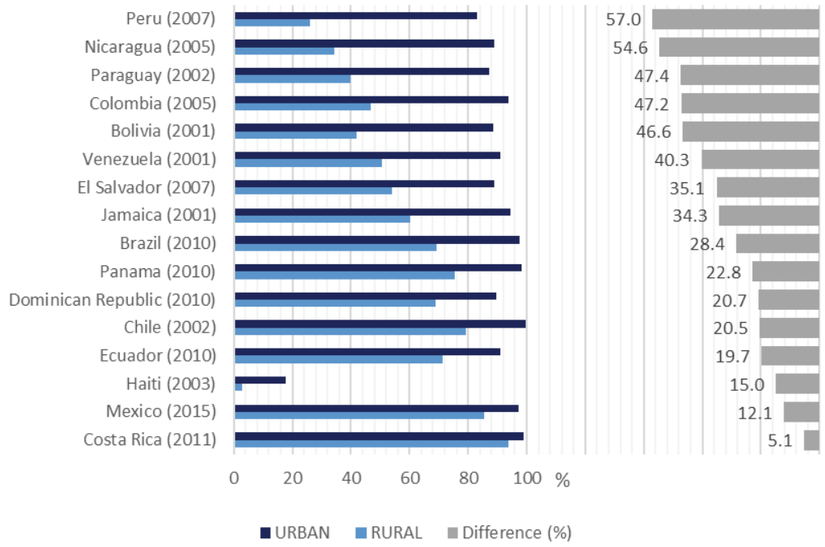


Figure 18 – Access to piped water by Rural-Urban Status
Source: Based on census microdata extracted from the IPUMS-International Project.

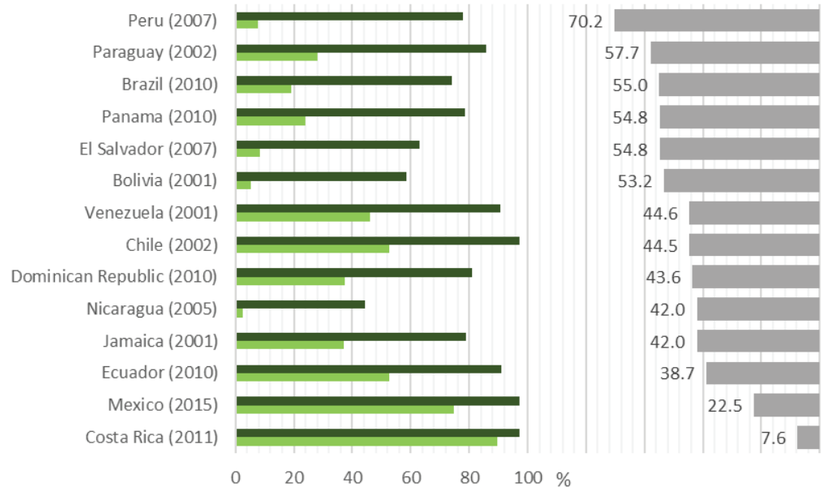


Figure 19 - Access to sewage systems or septic tanks by Rural-Urban Status
Source: Based on census microdata extracted from the IPUMS-International Project.

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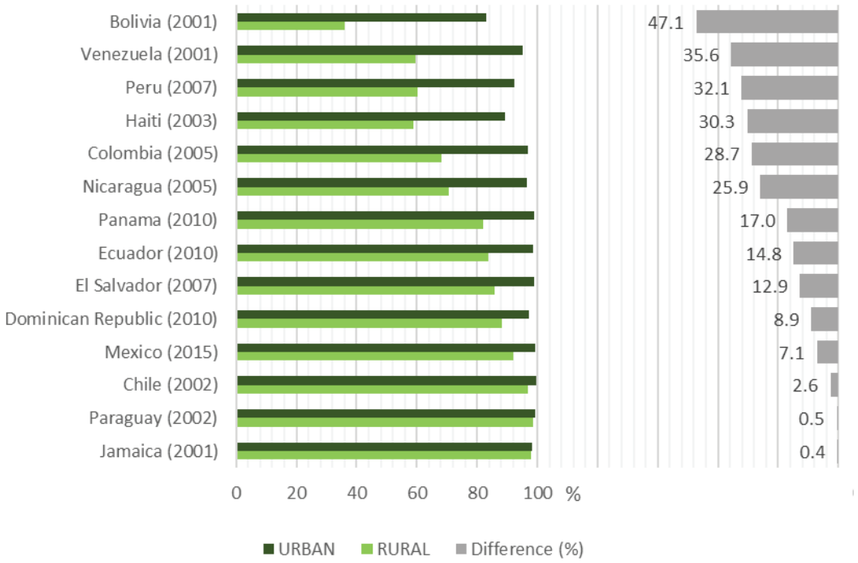

Figure 20 - Access to toilet by Rural-Urban Status
Source: Based on census microdata extracted from the IPUMS-International Project.

Figures 21 to 23 illustrate the coverage of piped water, sewage systems or septic tanks and to toilets by literacy status. The greatest difference in access to piped water between literate and illiterate people was observed in Nicaragua, which also have the second lowest coverage among all countries considered (only Haiti had a lower coverage). Following Nicaragua, the greatest inequalities between these two groups were observed in Panama (26 percentage point gap) and Peru (20). Inequalities in access to sewage systems or septic tanks were even stronger. The gap between literates and illiterates reached 44 percentage points in Panama, much larger than the other countries. Even so, in half of them, this difference exceeded 20 percentage points. In comparison, the countries of the South Cone (Uruguay, Chile and Argentina) exhibited relatively low levels of inequality, except for Brazil, which had a difference of almost 25 percentage points between the two groups. In regard to access to toilets, the highest level of inequality was also observed in Panama (which presented a gap of almost 25 percentage points between the two groups), followed by Bolivia (24), Haiti (22) and Nicaragua (20).

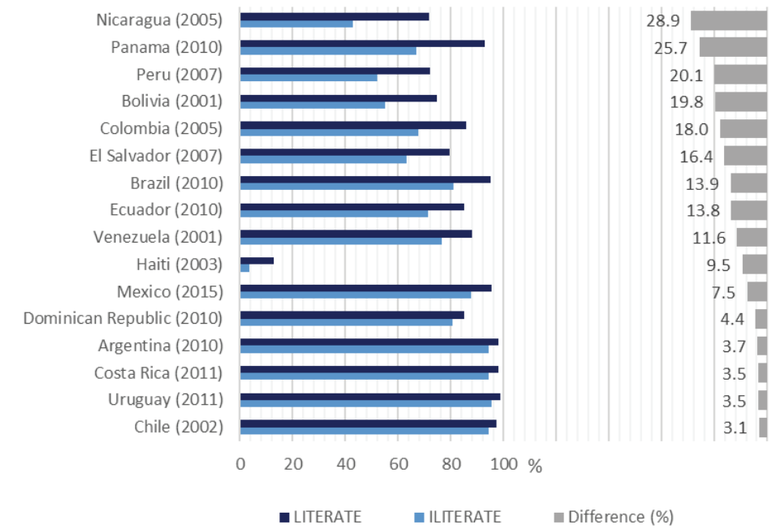

Figure 21 - Access to piped water by Literacy Status (%)
Source: Based on census microdata extracted from the IPUMS-International Project.
Note: The variable "literacy" indicates whether the respondent could read and write in any language. A person is typically considered literate if he or she can both read and write. All other persons are illiterate, including those who can either read or write but cannot do both.

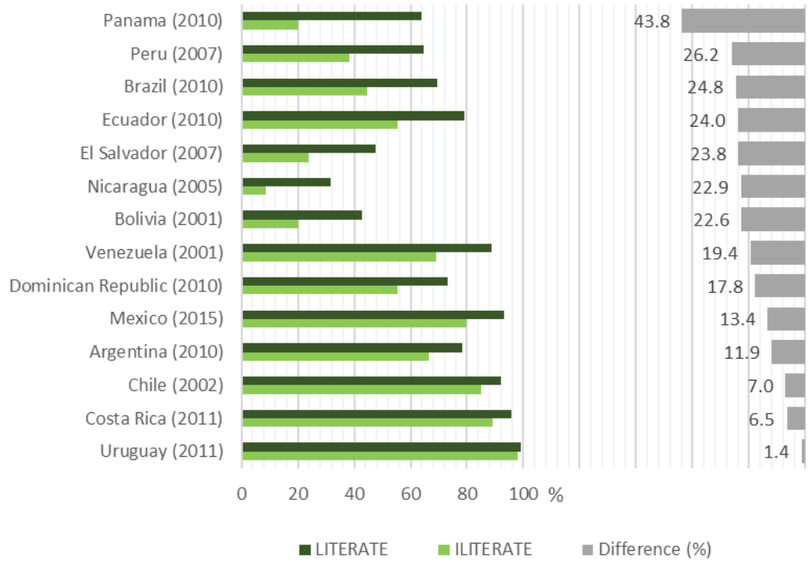

Figure 22 - Access to sewage systems or septic tanks by Literacy Status
Source: Based on census microdata extracted from the IPUMS-International Project.

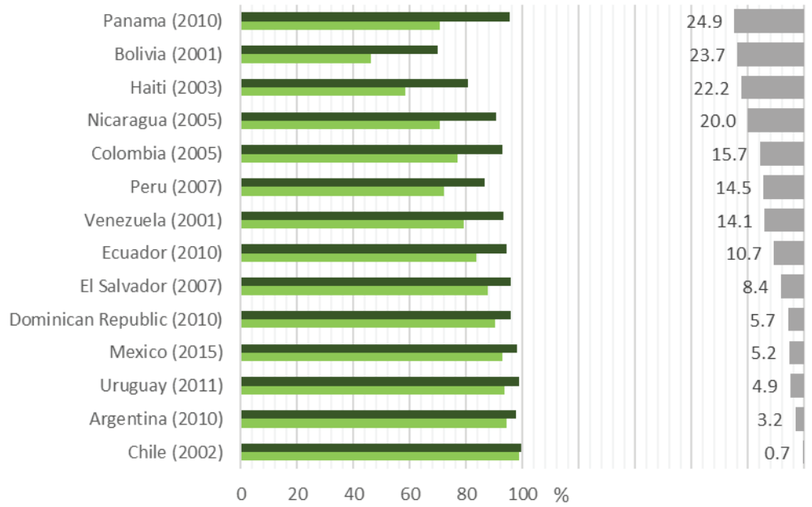

Figure 23 - Access to toilet by Literacy Status
Source: Based on census microdata extracted from the IPUMS-International Project.

Figures 24 to 26 show the access to piped water, sewage systems or septic tanks and toilets by people classified according to the educational attainment of the head of the household in which they reside, in terms of the level of schooling completed (degree or another milestone). The educational attainment of the household head classification does not necessarily reflect any particular country's definition of the various levels of schooling in terms of terminology or the number of years of schooling. It is an attempt to merge into a single, roughly comparable variable, samples that provide degrees, those that provide actual years of schooling, and those that have some of both [15]. In all countries, levels of access to the three services increase with the educational attainment of the household head but, in some of them, inequalities are much more pronounced. The highest gaps between the extreme categories ("university completed" and "less than primary completed") in the access to piped water were observed in Paraguay (49 percentage points), followed by Nicaragua (45) and Bolivia (42). Regarding access to the sewage system or septic tanks, the differences between the extreme categories were greater than 40 percentage points in more than half of the countries considered. Inequality levels were particularly high in Bolivia, Nicaragua, and El Salvador, with a gap of about 70 percentage points between the two extreme categories. Bolivia also had the highest inequality level in toilets coverage. This country exhibited a 50-percentage point gap between the two categories, more than double that of Peru and Nicaragua, the two most unequal countries after Bolivia in terms of access to toilets.

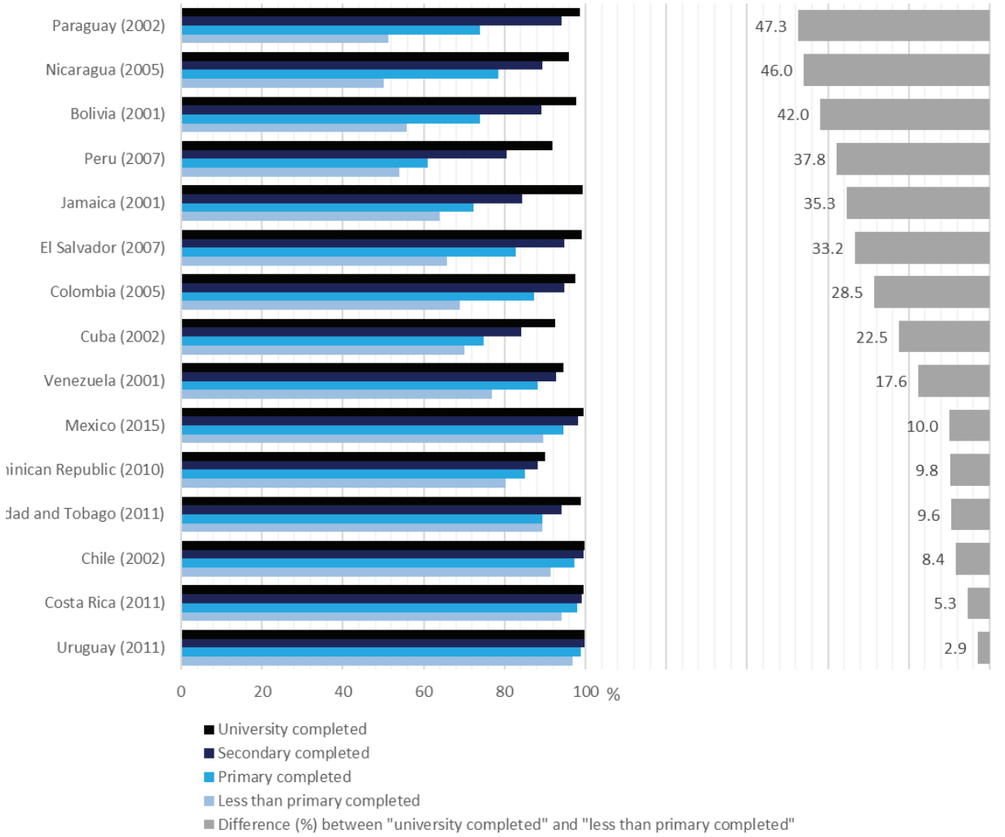

Figure 24 – Access to piped water by Educational Attainment of Household Head Status
Source: Based on census microdata extracted from the IPUMS-International Project.

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15 Minnesota Population Center (MPC). Integrated Public Use Microdata Series, International: Version 7.0 [dataset]. Minneapolis, MN: IPUMS, 2018.

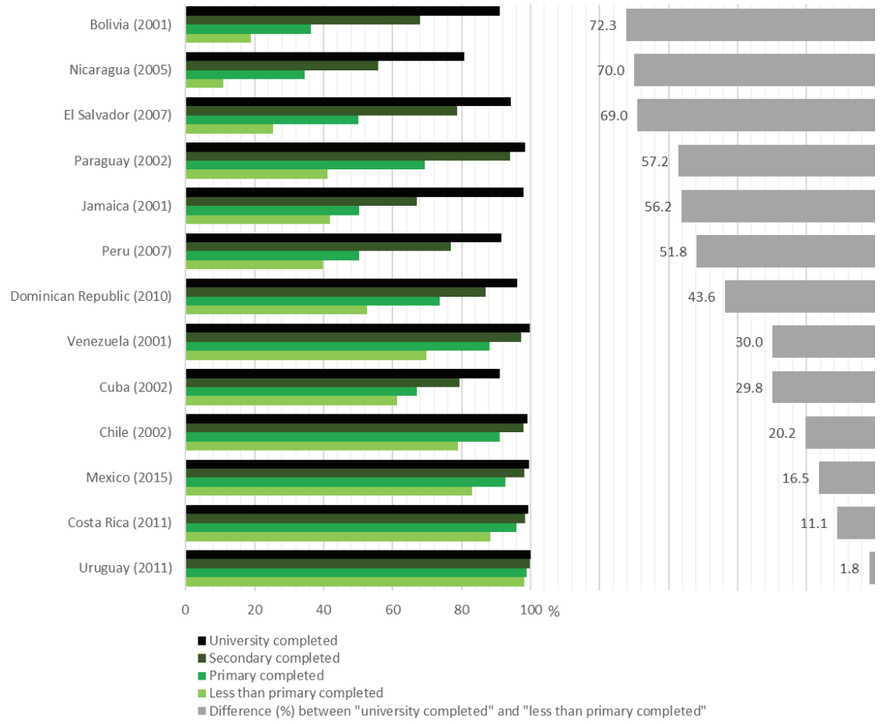

Figure 25 - Access to sewage systems or septic tanks by Educational Attainment of Household Head Status
Source: Based on census microdata extracted from the IPUMS-International Project.

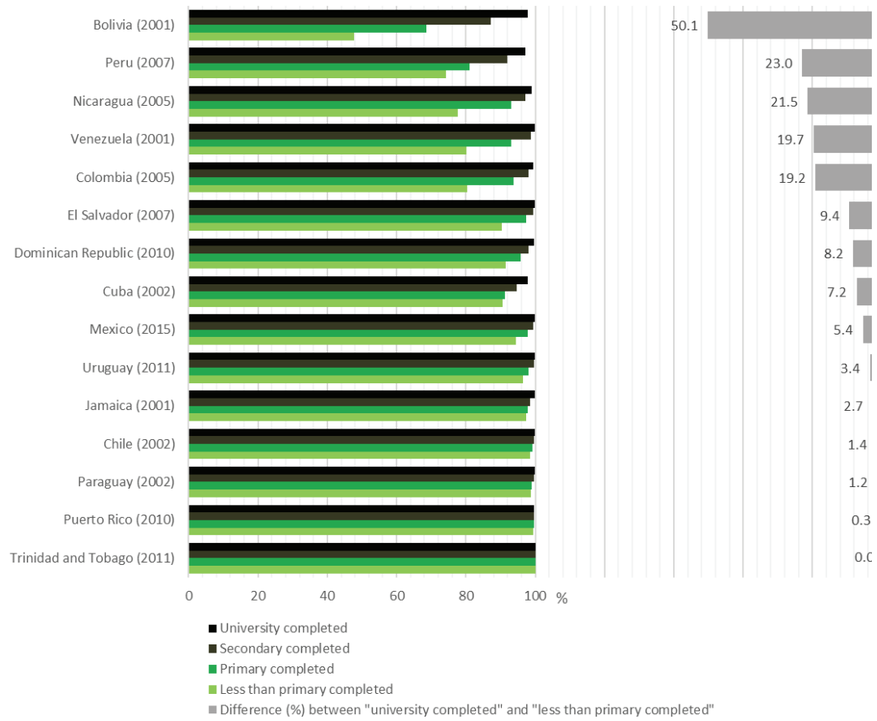

Figure 26 - Access to toilet by Educational Attainment of Household Head Status
Source: Based on census microdata extracted from the IPUMS-International Project.

Figures 27 to 29 illustrate access levels to piped water, sewage systems or septic tanks and to toilets by indigenous status. The greatest inequalities between indigenous and non-indigenous populations in the access to piped water was observed in Colombia (43 percentage points), followed by Panama (34), Paraguay (31) and Brazil (28). The largest gap in sewage systems or septic tanks coverage was in Paraguay (59 percentage points), where only 2.3% of the indigenous population had access to these facilities. Panama was the second most unequal country according to this criterion, with a 45-percentage point gap between indigenous and non-indigenous populations, followed by Ecuador (36) and Brazil (31). Finally, in relation to access to toilets, Panama had inequality between the two groups, followed closely by Colombia. In contrast, Uruguay showed no differences between indigenous and the rest of the population in the three variables considered.

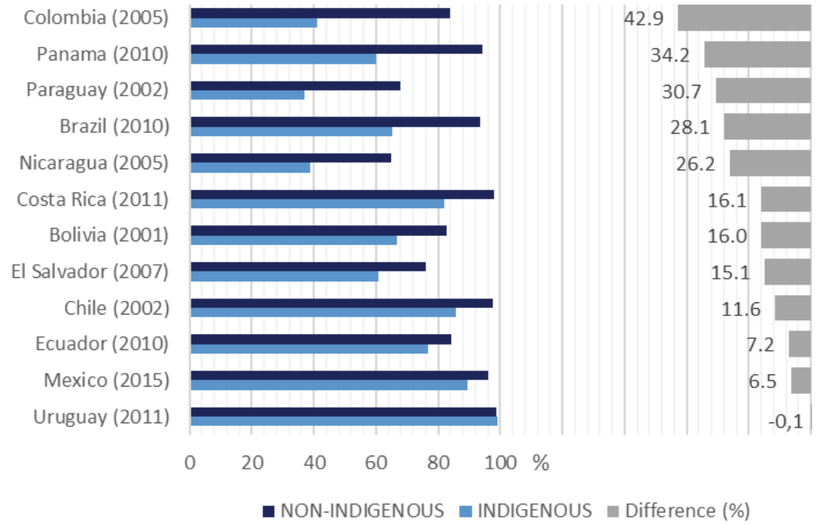

Figure 27 - Access to piped water by Indigenous Status
Source: Based on census microdata extracted from the IPUMS-International Project.

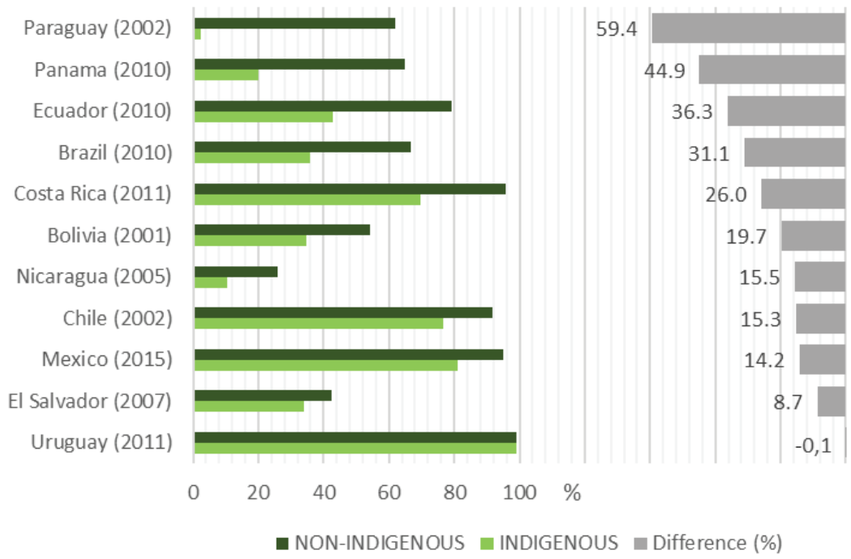

Figure 28 – Access to sewage systems or septic tanks by Indigenous Status
Source: Based on census microdata extracted from the IPUMS-International Project.

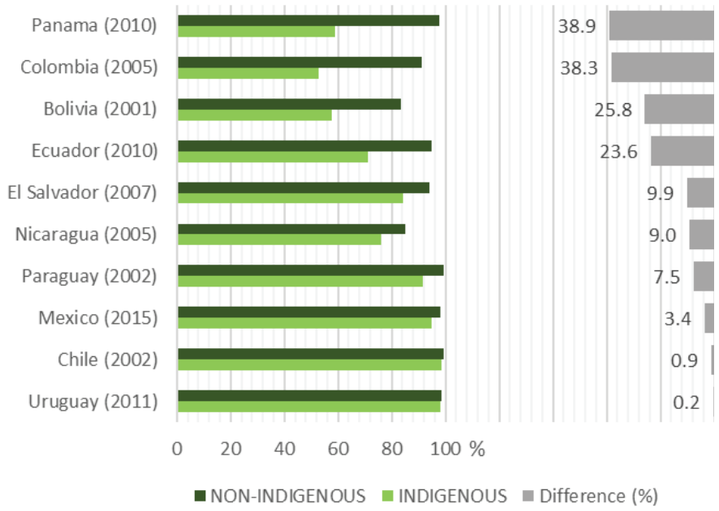

Figure 29 – Access to toilet by Indigenous Status
Source: Based on census microdata extracted from the IPUMS-International Project.

Figures 30 to 32 compare levels of access to piped water, sewage systems or septic tanks and to toilets by color or race. The race determination of respondents was largely based on ancestral appearance or place of origin and identifies the racial group with which a person has identified or to whom an enumerator has assigned them. For the purposes of this report, populations were divided into two large groups: whites and non-whites (including black, mixed race, indigenous, Asian and other classifications). Figure 30 shows that the spread in piped water coverage between them was much larger in Colombia and Jamaica than in other countries, which presented, respectively, a 22 and 18 percentage point gap - more than 12 points larger than all other countries. Jamaica also exhibited an atypical inequality level by color or race in relation to access to sewer systems or septic tanks (Figure 31), more than 22 percentage points above El Salvador, which holds the second worst position. The same can be said in relation to Colombia about coverage of toilet facilities (Figure 32). While the difference between whites and non-whites in all countries was less than 5 percentage points, in Colombia, the gap between these two groups reached 18 points. In the first two variables (access to piped water and sewage systems or septic tanks), Uruguay and Costa Rica were the most egalitarian countries according to the color or race criterion.

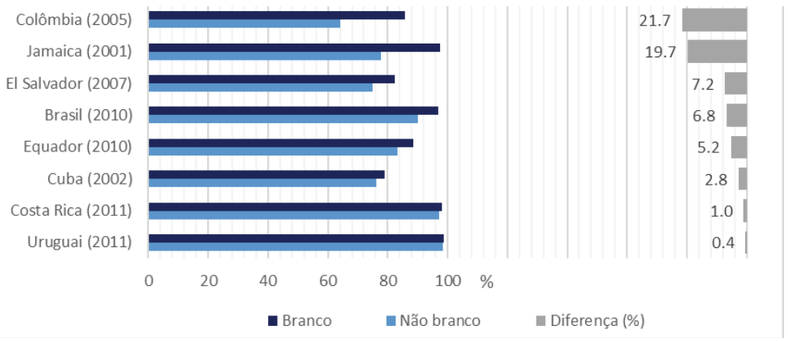

Figure 30 – Access to piped water by race
Source: Based on census microdata extracted from the IPUMS-International Project.

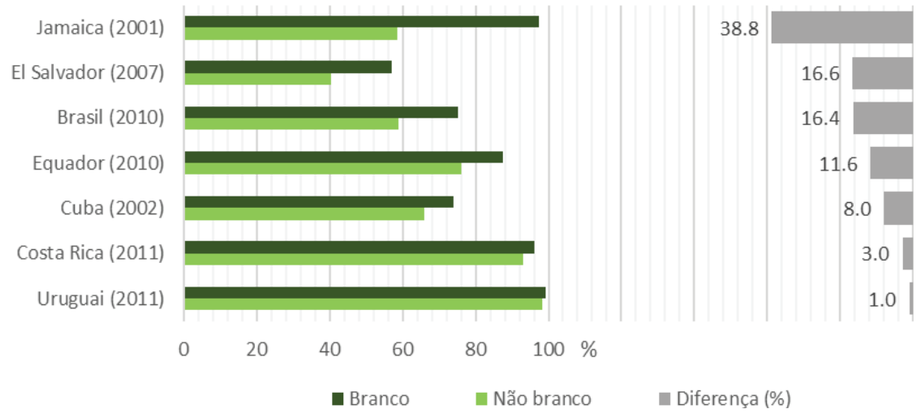

Figure 31 - Access to sewage systems or septic tanks by race
Source: Based on census microdata extracted from the IPUMS-International Project.

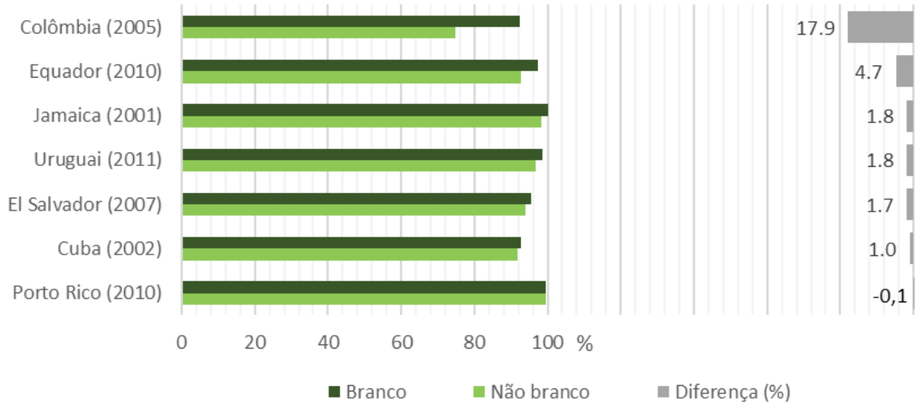

Figure 32 - Access to toilet by race
Source: Based on census microdata extracted from the IPUMS-International Project.

The study of inequalities in access to drinking water and sanitation services by sex and age is hampered by the fact that these variables are related to households, not to people. However, this does not mean that these differences do not exist. Figure 33, in addition to showing the proportion of population without water on premises (one of the criteria used to distinguish "basic" from "safely managed" drinking water services), indicates the main person responsible for the burden of fetching water in households by sex and age. Peru, El Salvador, Honduras and Jamaica had the highest proportion of population without water on premises. In these countries, more than 10% of the population did not have drinking water available in the household, yard or plot, reaching almost a fifth of the population in Peru. In half of the countries, adult women were the majority group responsible for fetching water. Although the highest percentage had been observed in Uruguay, it must be noted that this country had a very low proportion of people without water on premises, only 1%. Peru had the highest proportion of adult women responsible for collecting water (71 percentage points), followed by Honduras (66) and Panama (59). The highest proportion of children (under 15 years old) responsible for fetching water was observed in Honduras (15), where 14% of the population did not have access to drinking water on premises.

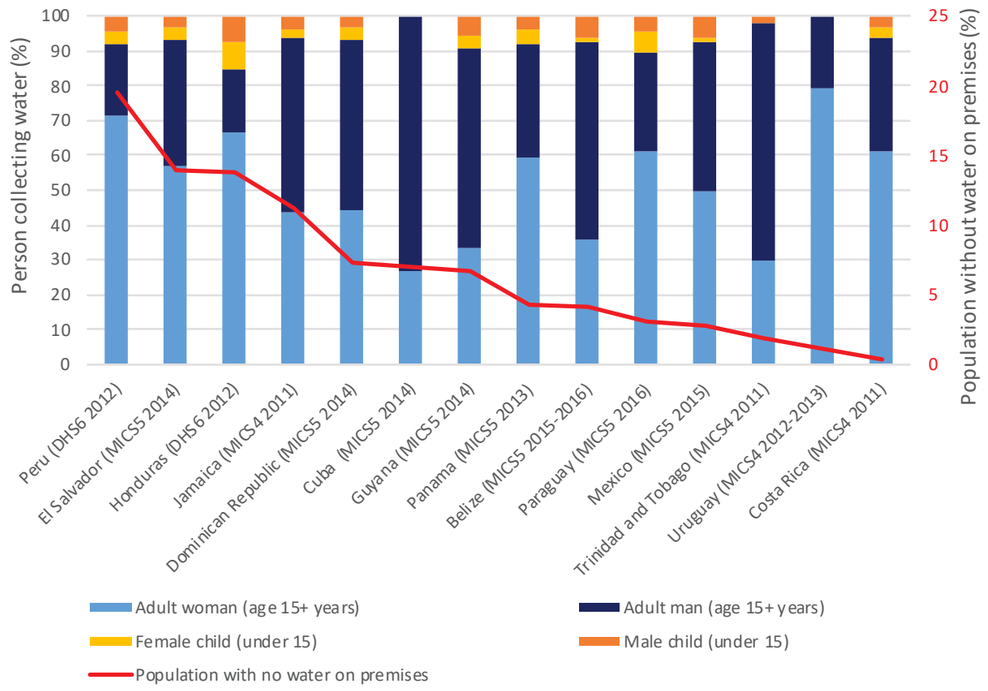

Figure 33 - Proportion of the population without water on premises and person collecting water
Source: DHS and MICS.
Note: No distinction was made in Cuba between the children' sex (people under 15 years old), which totaled 0.1%.

Although income inequality is one of the most widely discussed forms of inequality, few studies include this variable, considered difficult to obtain and measure. An alternative is the use of the "wealth index", a measure introduced in the late 1990s DHS editions, also used in the MICS and by the JMP itself, in an adapted manner. It is a composite measure regarding the living standard of households, usually presented in quintiles. Its calculation is based on data on household services and possessions, such as televisions, bicycles and construction materials. As the wealth index originally includes variables related to drinking water and sanitation facilities, to avoid overestimating inequalities, the JMP recalculates the index removing these variables (generating the "restricted wealth index") [16]. Figures 34, 35 and 36 show estimates of the access level to at least basic drinking water and sanitation and basic hygiene services by wealth quintiles using this methodology.

16 The risk of tautologies in the use of the wealth index to evaluate drinking water and sanitation was addressed by MICS itself in the following methodological paper: MARTEL P. (2016), **Review of options for reporting water, sanitation and hygiene coverage by wealth quintile**, MICS Methodological Papers, No.4, Data and Analytics Section, Division of Data, Research and Policy, UNICEF New York.

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Figure 34 shows that coverage of at least basic drinking water services for the richest quintile (Q5) was nearly universal in all countries, except for Haiti, which also presented the greatest inequality. In general, the poorest quintile (Q1) had a considerably lower level of access to these services. Differences between these two subgroups were particularly pronounced in Bolivia, Colombia, El Salvador and Peru. In contrast, the chart suggests that Santa Lucia, Costa Rica, Belize and the Dominican Republic are more egalitarian countries in this matter. The coverage of at least basic sanitation services by wealth quintiles was much more diverse. Even though in Bolivia, Haiti and Honduras access to these services was relatively low even for the richest quintile, data suggest a particularly high vulnerability of the poorest. In several countries, populations classified in the poorest quintile had a much lower level of access to sanitation services than the rest of the population. In Suriname, for example, the gap between the poorest quintile (Q1) and the second poorest (Q2) was 38 percentage points. In Colombia, Panama, Dominican Republic, Guyana and El Salvador, this difference exceeded 15 points. In relation to hygiene, the differences in access to basic facilities between countries call attention as much as intranational inequalities. The lowest levels of coverage, including the richest quintiles, were observed in Suriname, Belize, Costa Rica and Haiti, but the highest level of inequality was shown by the Dominican Republic, where access grows sharply according to wealth.

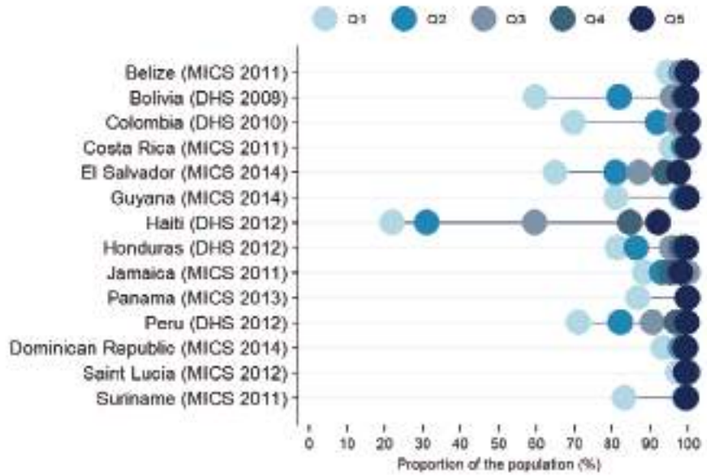

Figure 34 - Proportion of population using at least basic drinking water services by wealth quintiles
Source: WHO/UNICEF/JMP (2017)

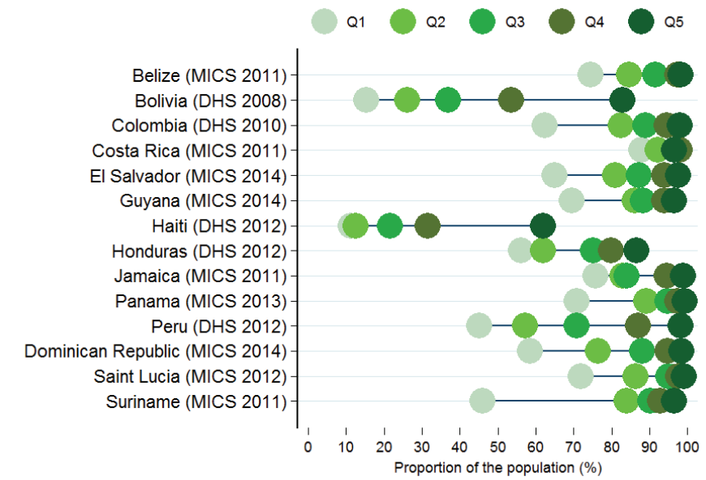

Figure 35 - Proportion of population using at least basic sanitation services by wealth quintiles
Source: WHO/UNICEF/JMP (2017)

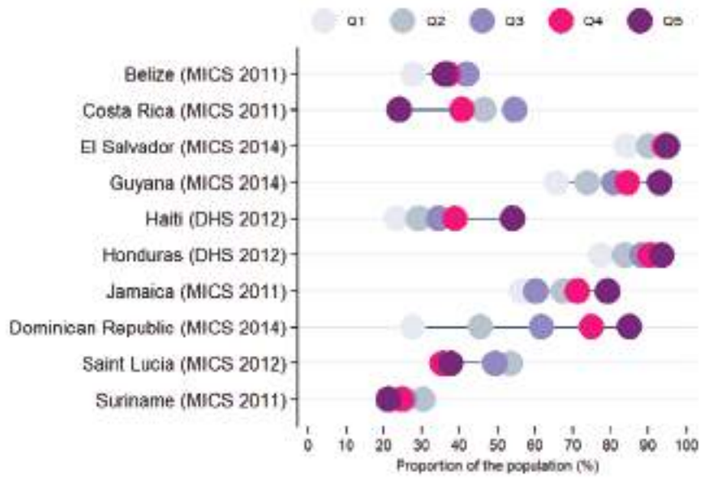

Figure 36 - Proportion of population using basic hygiene facilities by wealth quintiles
Source: WHO/UNICEF/JMP (2017)

3.2 | Multiple layers of inequality

The previous section showed inequalities in access to WASH services not only between Latin American and Caribbean countries, but also between the general population and more vulnerable subgroups within these countries. One limitation of this type of analysis is that people in vulnerable situations often accumulate different dimensions of inequality, which further increases their chances of being deprived of WASH services or facilities. Thus, it is worth exploring how certain population segments are at a profound disadvantage in comparison with others, considering multiple layers of inequality. Figures 37 to 39 compare the coverage of piped water, sewage systems or septic tanks and toilets of two very different population profiles: one potentially less vulnerable - white urban population living in households headed by people with university completed - and one more susceptible to situations of vulnerability (black rural population living in households headed by people with less than primary education completed). The number of countries in the charts is lower than that of the previous section because only a few contain all the variables necessary to carry out this analysis. Despite that, it was possible to represent at least one country from each sub-regional block (except for the South Cone in the variable "access to toilet").

In all countries represented, the less vulnerable group had nearly universal access to piped water, up to 99 percentage points, while the access by the more vulnerable group ranged from 36.4 to 84.3 (Figure 37). The greater inequality between them was observed in Colombia, with a difference higher than 60 percentage points. After Colombia, the largest gap was observed in El Salvador and Ecuador, respectively with a 57- and a 54- percentage point gap. Even in Costa Rica, which had the lowest inequality level between the two subgroups, this gap exceeded 15%.

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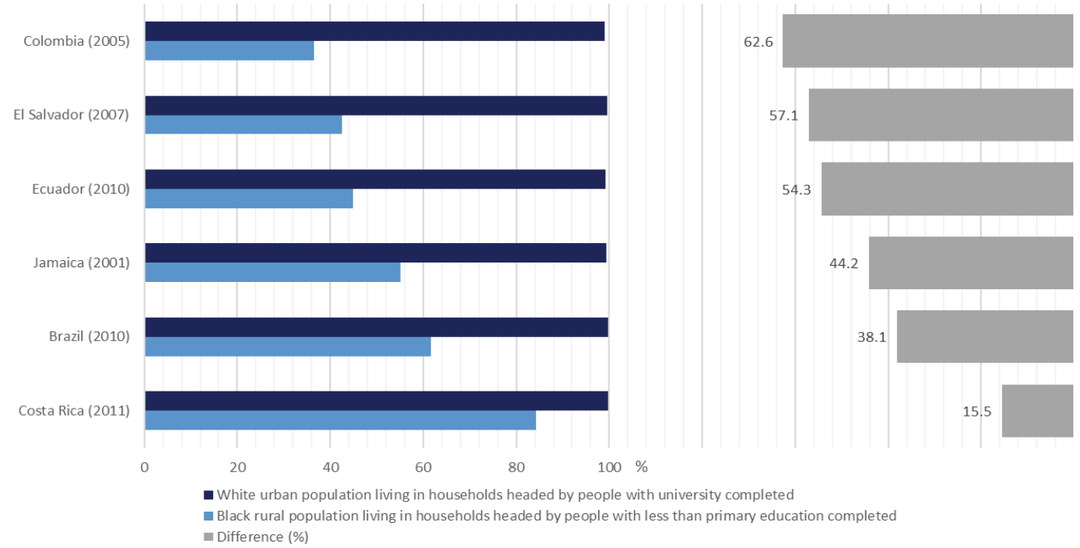


Figure 37 - Access to piped water by the white urban population living in households headed by people with university completed in comparison with the black rural population living in households headed by people with less than primary education completed
Source: Based on census microdata extracted from the IPUMS-International Project.

Figure 38 shows even more pronounced differences between the two subgroups in the coverage of sewage systems or septic tanks, which tends to be smaller than piped water. Except for Costa Rica, the gap in all countries considered was larger than 64 percentage points. In El Salvador there is an abysmal difference of 91 percentage points between the most vulnerable and the least vulnerable group.

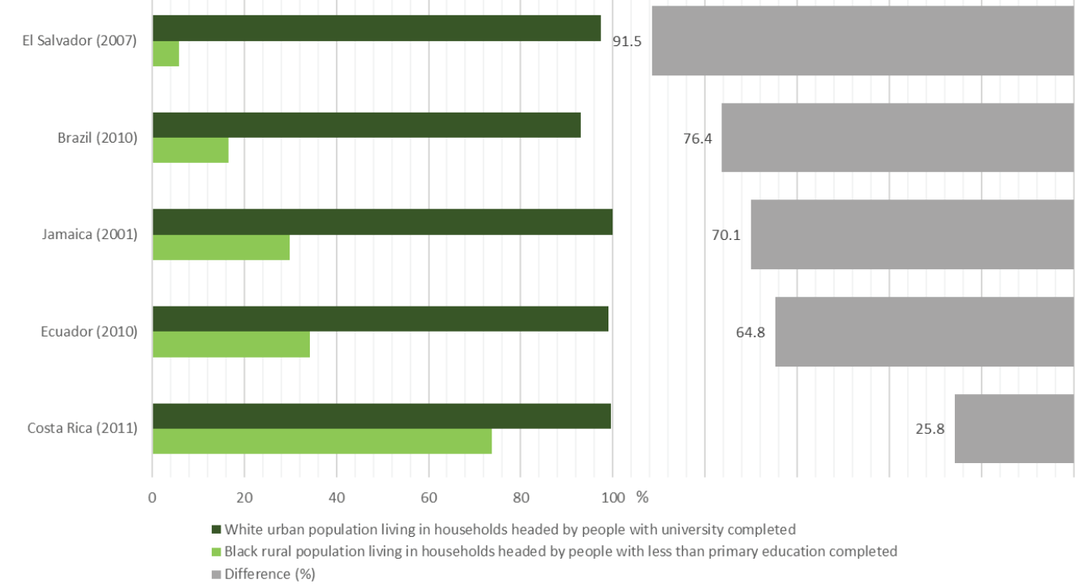


Figure 38 - Access to sewage systems or septic tanks by the white urban population living in households headed by people with university completed in comparison with the black rural population living in households headed by people with less than primary education completed
Source: Based on census microdata extracted from the IPUMS-International Project.

The greatest inequality in access to toilets among the four countries represented in Figure 39 was observed in Colombia, which had a 47-percentage point gap between the two subgroups, followed by Ecuador (21) and El Salvador (11). In contrast, Jamaica, which had a fairly high-level coverage of toilet facilities, had a gap of just 2.7 percentage points.

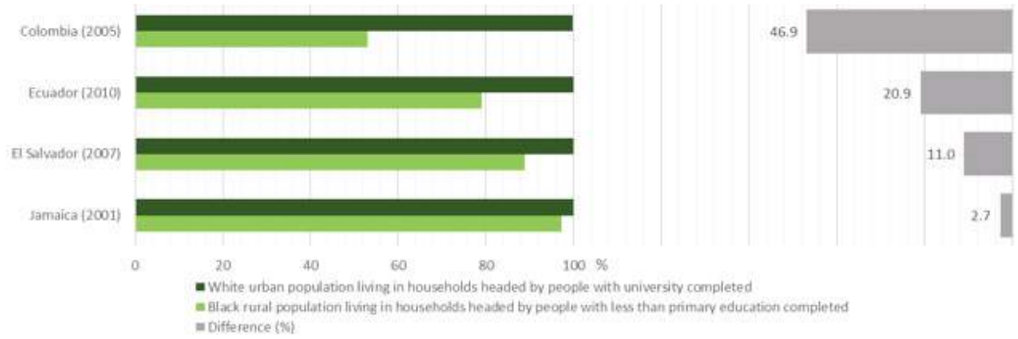


Figure 39 - Access to toilet by the white urban population living in households headed by people with university completed in comparison with the black rural population living in households headed by people with less than primary education completed
Source: Based on census microdata extracted from the IPUMS-International Project

3.3 | Inequality-adjusted indexes of access

The SDG targets 6.1 and 6.2 include explicit references to equitable access to water and sanitation. However, the methodologies proposed by the JMP for the monitoring of these targets do not incorporate this dimension. In order to measure inequalities in access to services in a way that allows comparisons between countries, two measures were estimated specifically for this report: the Inequality-Adjusted Index of Access to Water (IAIW) and the Inequality-Adjusted Index of Access to Sanitation (IAIS), according to the methodology detailed below.

The Inequality-Adjusted Index of Access to Water (IAIW) and the Inequality-Adjusted Index of Access to Sanitation (IAIS), used in this report, are methodologically based on the Human Opportunity Index (HOI), developed to measure the inequality of opportunities in the access to basic services by children [17]. It summarizes in a single composite indicator: (i) how many opportunities are available, that is, the coverage rate of a basic service; and (ii) how equitably those opportunities are distributed, that is, whether the coverage distribution is related to exogenous circumstances. Hence, an increase in the overall coverage of a basic service will always improve the index. If such increase reduces inequality, it will improve the index even further. On the other hand, if there is an increase in coverage alongside an increase in inequality, the index improves, but in a smaller proportion than the increase in coverage.

The Human Opportunity Index calculates the coverage rate of a service weighted by the way the access to this service is distributed, as shown by the equation below.

$$HOI = C.(1-D)$$

The coverage rate (C) is calculated by the simple average of the conditional probabilities[18].

$$C = \frac{1}{N}\sum_{i=1}^{n} Pi$$

The inequality adjustment factor (D) measures the differences in access to a given opportunity for groups defined by certain circumstances in comparison with the average access, given by the coverage rate. This indicator can be interpreted as the fraction of all opportunities that need to be reallocated to restore equal opportunities for the goods or service under analysis. Its value varies between zero and one: the closer to zero, the more equitable and fairer is the distribution of access. This way, the greater the D value, the greater will be the difference in access of a specific group to goods or services in relation to the coverage rate.

$$D = \frac{1}{2C}\sum_{i=1}^{n}\frac{1}{N}\left|Pi - C\right|$$

In the adaptation of the Human Opportunity Index made for the access to water and sanitation, the adjusted accesses (IAIW and IAIS) were calculated according to the following equations:

$$IAIW = A_A.(1-D_A)$$

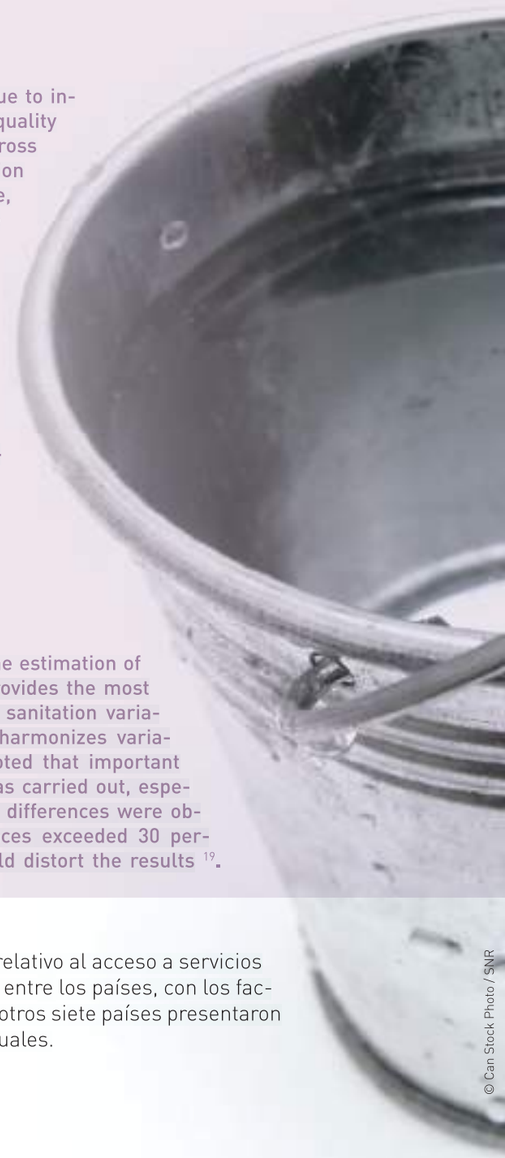
$$IAIS = A_E.(1-D_E)$$

"A" is the gross (unadjusted) access and "D" is the adjustment factor due to inequality in the access by different population groups. If there is no inequality in access, D assumes the value zero and there is no adjustment in the gross access value. On the contrary, in an extreme situation of total concentration of access, D assumes the value 1 and the adjusted access is null. Therefore, the (1 - D) portion of the equation acts as a reducer or a way to penalise the greater inequalities.

For this report, the inequality factor was computed the same way as the Human Opportunity Index, through a logistic regression. The most recent data provided by the JMP and the IPUMS-International project were used in the calculations. The following variables (according to availability by country) were chosen:

- Rural-Urban Status
- Geographical region (according to the administrative subdivision adopted by the countries)
- Race
- Indigenous status
- Educational attainment of household head
- Literacy status

The census microdata of the IPUMS-International project was used in the estimation of the inequality-adjusted access for two main reasons: (i) census data provides the most detailed picture of countries and enables disaggregation of water and sanitation variables by socioeconomic variables; (ii) the IPUMS-International project harmonizes variables, allowing comparison between countries. However, it must be noted that important changes may have occurred in some countries since the last census was carried out, especially those with more outdated information. In some cases, significant differences were observed between censuses and JMP access data. When these differences exceeded 30 percentage points, the adjusted accesses were not computed, as they could distort the results [19].



La Figura 40 muestra el mapa del factor de desigualdad relativo al acceso a servicios de abastecimiento de agua. Se observó una disparidad grande entre los países, con los factores que varían del 1% en Argentina al 41% en Haití. Además, otros siete países presentaron un factor de desigualdad por encima de los 10 puntos porcentuales.

17 BARROS, R. P. et al. **Measuring inequality of opportunities in Latin America and the Caribbean.** Washington, DC: Palgrave Macmillan and the World Bank, 2009. 222 p.
18 For more details on the calculation, see previous footnote.
19 This choice was made on the basis of several simulations and evaluation of the methodology's sensitivity.

Haiti was the most unequal country in relation to access to water supply among all countries evaluated and the inequality factor exceeded 15 percentage points in Bolivia, Colombia and Peru (in the Andean block)

Figure 40 - Inequality factor regarding water supply services
Source: Based on census microdata extracted from the IPUMS-International Project.

Figure 41 shows the inequality factor regarding sanitation services for 16 countries. As in the case of access to water supply, inequalities between countries were huge. The inequality factor regarding sanitation services exceeded 20 percentage points in Bolivia, Brazil, El Salvador, Panama, Paraguay and Peru, reaching 45.5 points in Nicaragua, the most unequal country according to this criterion.

Inequalities in the access to sanitation services were greater than inequalities in water services in all countries (except Uruguay), being particularly severe in Nicaragua, Bolivia and El Salvador

Figure 41- Inequality factor regarding sanitation services
Source: Based on census microdata extracted from the IPUMS-International Project.

Figure 42 shows access data to safely managed and at least basic drinking water services and the inequality-adjusted index of access to water (IAIW). Argentina, Chile and Costa Rica had a high proportion of access to safely managed services and a low inequality factor. Colombia, Nicaragua and Peru presented a high inequality factor with a medium to low proportion of access.

Regarding access to at least basic drinking water services, it should be noted that Argentina, Chile and Costa Rica had a 100% coverage, so, in these cases, the inequality factor was zero. Besides these countries, Trinidad and Tobago also stood out positively with the lowest inequality factor. All countries had a proportion of access equal to or greater than 90%, except Nicaragua, which also had a high inequality factor. Five countries presented an inequality factor higher than 10 percentage points: Peru, Bolivia, Jamaica, Colombia and El Salvador.

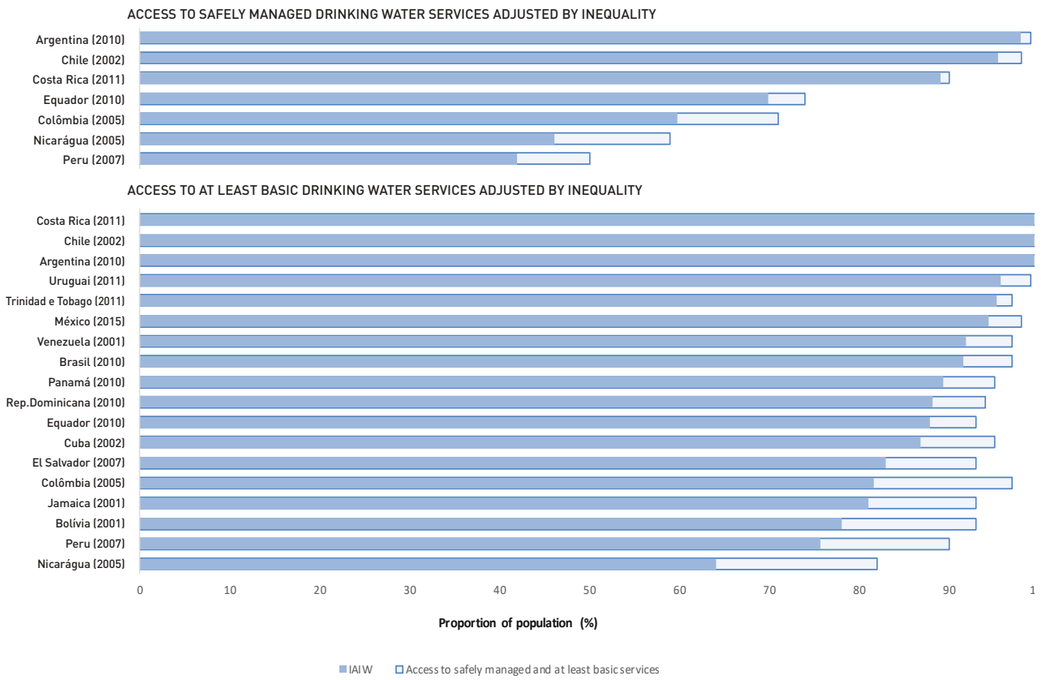


Figure 42 - Access to safely managed and to at least basic drinking water services adjusted by inequality
Source: Based on census microdata extracted from the IPUMS-International Project.

Figure 43 illustrates the effect of using the adjusted access comparing Colombia and Ecuador. While the access to at least basic services in these countries was, respectively, 97 and 93 percentage points, the adjusted access was 82 points for Colombia and 88 points for Ecuador. This means that, after the "penalization" for inequality, there was an inversion in the relative position of the two countries.

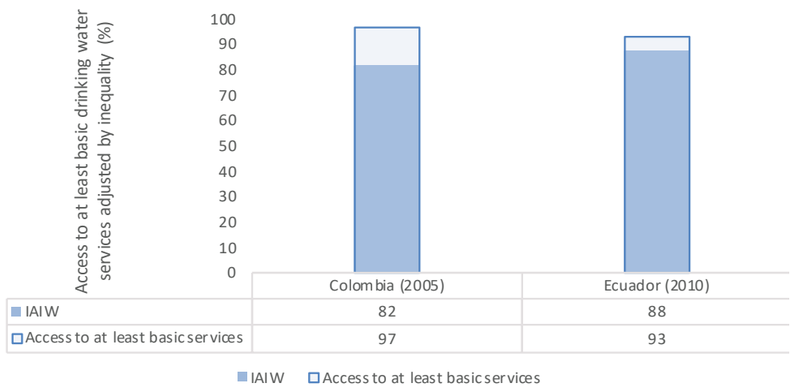


Figure 43 - Colombia and Ecuador - Access to at least basic drinking water services adjusted by inequality
Source: Based on census microdata extracted from the IPUMS-International Project.

In Figure 44, the access to safely managed drinking water services in Mexico and Peru are compared. A difference of 7 percentage points was observed between the two countries, with Peru showing a coverage of 50% and Mexico, 43%. When adjusted by inequality, access levels were practically the same, revealing a significant inequality in Peru.

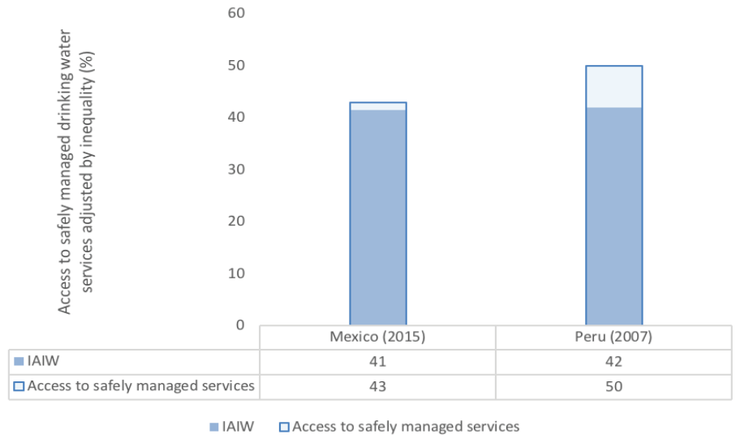


Figure 44 - Mexico and Peru - Access to safely managed drinking water services adjusted by inequality
Source: Based on census microdata extracted from the IPUMS-International Project.

The graph of Figure 45 shows the access to safely managed and to at least basic sanitation services adjusted by inequality. The Inequality-Adjusted Index of Access to Sanitation (IAIS) for the safely managed level was computed for the ten countries that have such data available at the national level. Chile presented the highest coverage of services but exhibited an inequality factor higher than Uruguay, which had practically no inequalities in the access to safely managed services (that is, there was almost no adjustment in the level of access due to inequalities). Argentina and Venezuela presented a relatively low proportion of access to safely managed services, but their inequality factors were also low. On the other hand, Bolivia, Peru and Brazil had low levels of access and very significant inequality factors, above 20%. In relation to at least basic sanitation services, it was possible to calculate the IAIS for 15 countries. As Chile had universal access to services at this level, it was not penalized by inequality. Besides the countries previously highlighted, Nicaragua and Panama also presented high inequality factors. Costa Rica stood out for having the lowest inequality factor among the countries analyzed.

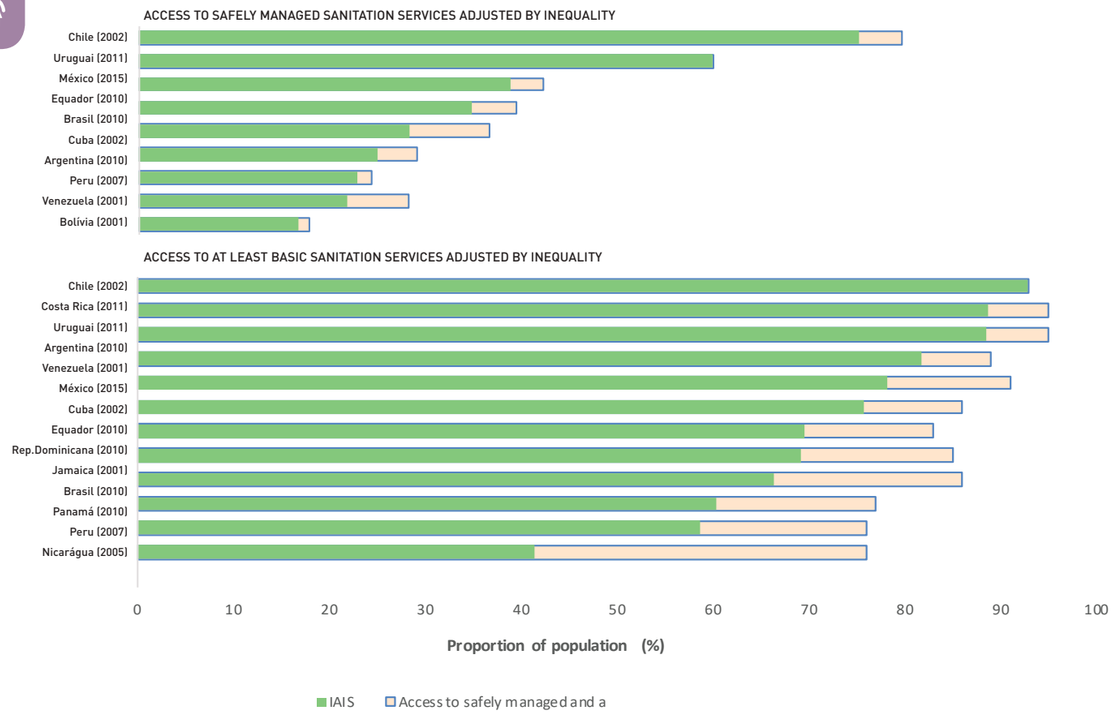


Figure 45 - Access to safely managed and to at least basic sanitation services adjusted by inequality
Source: Based on census microdata extracted from the IPUMS-International Project.

Figure 46 compares the access to safely managed sanitation services adjusted by inequality in Argentina and Peru. In this case, the adjusted levels caused a reversal of the position of these countries. Peru had a coverage of safely managed sanitation services 4 percentage points higher than Argentina, but when inequalities were considered, Argentina presented a better level of access.

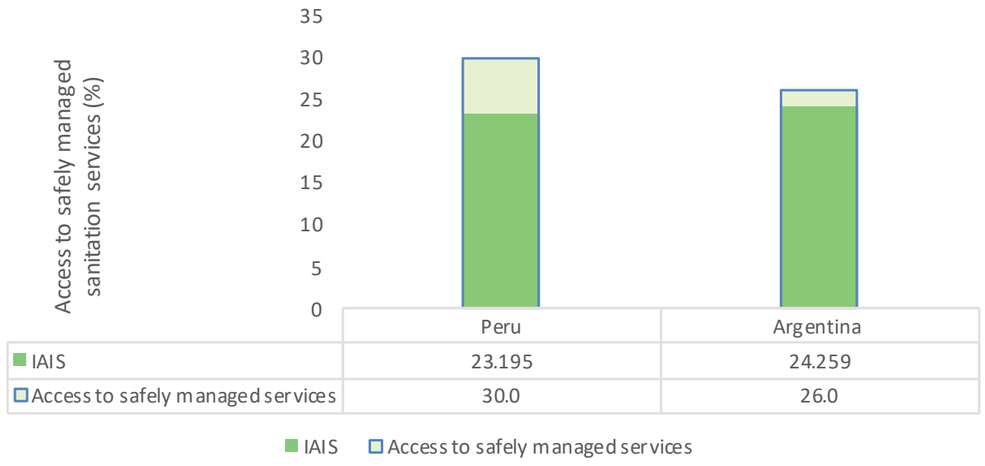


Figure 46 - Peru and Argentina - Access to safely managed sanitation services adjusted by inequality
Source: Based on census microdata extracted from the IPUMS-International Project

Figure 47 shows the access to at least basic sanitation services adjusted by inequality comparing Brazil and Ecuador, which had practically the same coverage in this level. However, adjusting the access by inequality, the gap between these countries reached almost 10 percentage points, with Ecuador presenting the highest IAIS.

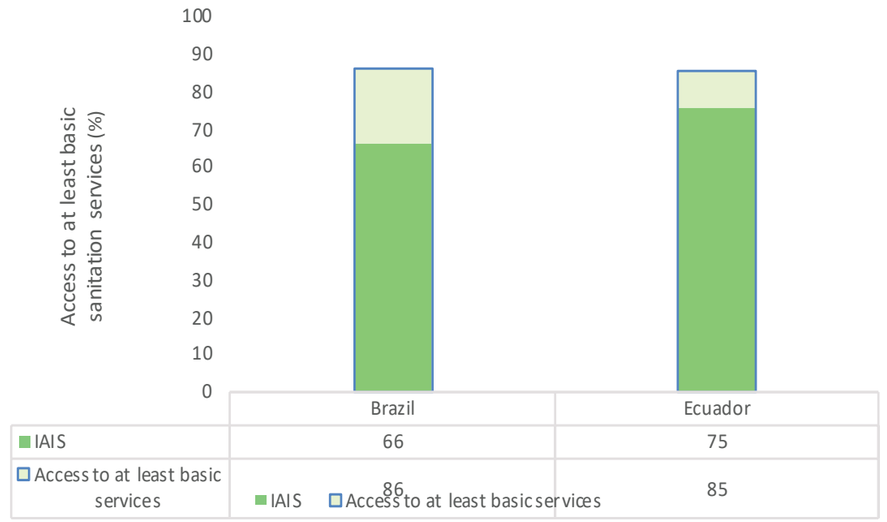
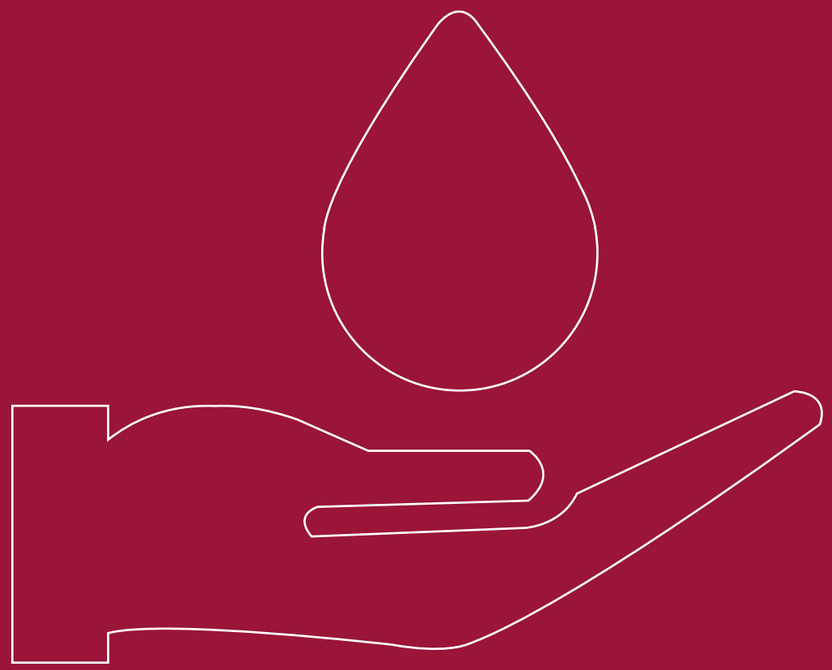


Figure 47 - Brazil and Ecuador - Access to at least basic sanitation services adjusted by inequality
Source: Based on census microdata extracted from the IPUMS-International Project

The methodology used to calculate the inequality-adjusted levels of access shows great potential to incorporate the inequality dimension in the monitoring of access to drinking water and sanitation services. In addition to being conceptually robust, the calculation of the adjusted indices is simple, allows comparisons between countries, can be used at different spatial scales and can be graphically represented. The presentation of the Inequality-Adjusted Access Index using safely managed services data allows a closer approximation to the full monitoring of targets 6.1 and 6.2. Nevertheless, in order to cover all attributes defined by the 6.1 target, it is also necessary to face the challenge of incorporating the affordability dimension, discussed in the next chapter.



4 | AFFORDABILITY

Affordability can be understood as the access to water and sanitation services at affordable prices, that is, without compromising access to other essential goods and services, especially for the lower income populations [20]. Affordability is an explicit attribute of the SDG target 6.1 and, for this reason, should require monitoring and even be part of the safely managed services definition adopted in the indicator 6.1.1. Although the expression is not explicit in the target 6.2, it is essential to consider it from the perspective of the Human Rights to Safe Drinking Water and Sanitation (HRWS). In this chapter, a combined evaluation of the affordability dimension of both water and sanitation services is carried out. Ideally, the monitoring of the SDGs would require the distinction between the two types of services but there are important methodological challenges hindering the inclusion of the affordability dimension in the SDGs monitoring: (i) the difficulty to characterize and define the parameters for its evaluation [21]; (ii) the scarcity of data.

The most widely used indicator for assessing affordability is based on the relationship between expenditure on water and sanitation services and household income or expenditure. Despite several conceptual criticisms [22], this indicator is the most widely used because of its feasibility. In this report, this indicator was adapted and a standard monthly consumption of 5m³ per capita [23] was used to allow comparisons between countries. Besides that, only the four poorest deciles of household income were considered. Its calculation is made as follows:

$$I_{AE} = n \frac{(G_A + G_E)}{R_D}$$

Where:

I_{AE} - Indicator of Affordability for Water and Sanitation

n - Number of household residents

G_A - Household expenditure on water services per month

G_E - Household expenditure on sanitation services per month

R_D - Household income

20 UNHRC, U. N. H. R. C. **Report of the Special Rapporteur on the human right to safe drinking water and sanitation (On Affordability)**. Geneva: [s.n.], 2015.

21 For a better understanding of the debate, see: BROWN, C.; HELLER, L.. **Affordability in the provision of water and sanitation services: Evolving strategies and imperatives to realise human rights**. International Journal of Water Governance. 5. 19-38. 2017 10.7564/16-IJWG128.;
HUTTON, G. **Monitoring "Affordability" of water and sanitation services after 2015: Review of global indicator options.** A paper submitted to the UN Office of the High Commissioner for Human Rights, 20 March. 2012
SMETS, H. Quantifying the affordability standard, in Langford, M., & Russell, A. (Eds.). (2017). **The Human Right to Water: Theory, Practice and Prospects**. Cambridge: Cambridge University Press. doi:10.1017/9780511862601

22 See previous footnote.

23 Although it results in high per capita consumption (167 L/ inhab.day), it was adopted for two reasons: (i) water consumption is quite high in several regions of Latin America and the Caribbean; (ii) it generates a safety margin for the evaluation.

Due to data limitations, the analysis was made only for the national capitals of some countries [24]. The International Benchmarking Network for Water and Sanitation Utilities (IBNET) [25] was used for the estimation of expenditure on water and sanitation services and the Socio-Economic Database for Latin America and the Caribbean (SEDLAC - CEDLAS and The World Bank)[26] was used for estimating household income. Figure 48 shows the results.

COUNTRY	1º DECILE				2º DECILE			
	1 RESIDENT	2 RESIDENTS	3 RESIDENTS	4 RESIDENTS	1 RESIDENT	2 RESIDENTS	3 RESIDENTS	4 RESIDENTS
BUENOS AIRES - ARG								
LA PAZ - BOL								
BRASÍLIA - BRA								
SANTIAGO - CHL								
BOGOTÁ - COL								
SAN JOSÉ - CRI								
SAN SALVADOR - SLV								
QUITO - ECU								
SAN PEDRO SULA - HND								
CIDADE DO MÉXICO - MEX								
MANÁGUA - NIC								
CIDADE DO PANAMÁ - PAN								
ASSUNÇÃO - PRY								
LIMA - PER								
SANTIAGO - DOM								
MONTEVIDEO - URY								

COUNTRY	1º DECILE				2º DECILE			
	1 RESIDENT	2 RESIDENTS	3 RESIDENTS	4 RESIDENTS	1 RESIDENT	2 RESIDENTS	3 RESIDENTS	4 RESIDENTS
BUENOS AIRES - ARG								
LA PAZ - BOL								
BRASÍLIA - BRA								
SANTIAGO - CHL								
BOGOTÁ - COL								
SAN JOSÉ - CRI								
SAN SALVADOR - SLV								
QUITO - ECU								
SAN PEDRO SULA - HND								
CIDADE DO MÉXICO - MEX								
MANÁGUA - NIC								
CIDADE DO PANAMÁ - PAN								
ASSUNÇÃO - PRY								
LIMA - PER								
SANTIAGO - DOM								
MONTEVIDEO - URY								

AFFORDABILITY INDICATOR

- < 2%
- Between 2% and 6%
- Between 6% and 12%
- Above 12%

Figure 48 - Affordability Indicator by income deciles and number of household residents
Source: Based on IBNET and SEDLAC

The first decile had the highest income impairment in the 16 scenarios represented in Figure 48 (four deciles times four classes of households classified by the number of residents, varying from one to four). In other words, the poorest decile had the lower potential affordability. This should be expected, as no benefit was applied to lower income populations, such as social tariffs, discounts or government subsidies. Therefore, the values regarding the poorest deciles are higher than the real ones in those countries and for those populations that receive these benefits. Among the highest values, 14 are in the one resident per household simulation while the other 2 are in the four residents per household simulation. The chart shows an overall trend of greater income impairment in simulations with fewer residents and lower income impairment as consumption increases. Such variations are basically due to the adopted tariff structure, in most cases with an initial block of consumption and the subsequent ones progressive, with great variations in the definition of the initial block and the progressivity.

All countries exhibited some degree of affordability problems. Colombia was the most critical case, presenting high income impairments for all simulations. Brazil also showed high values for several simulations and, in addition, it was one of the few countries where income impairment grew accordingly to the number of household residents, due to the high progressiveness of the rate. This is a worrying situation, considering the tendency of the poorest households to have more residents. Honduras, Dominican Republic and Peru also called attention due to high income impairments. In contrast, El Salvador and Nicaragua had the lowest values.

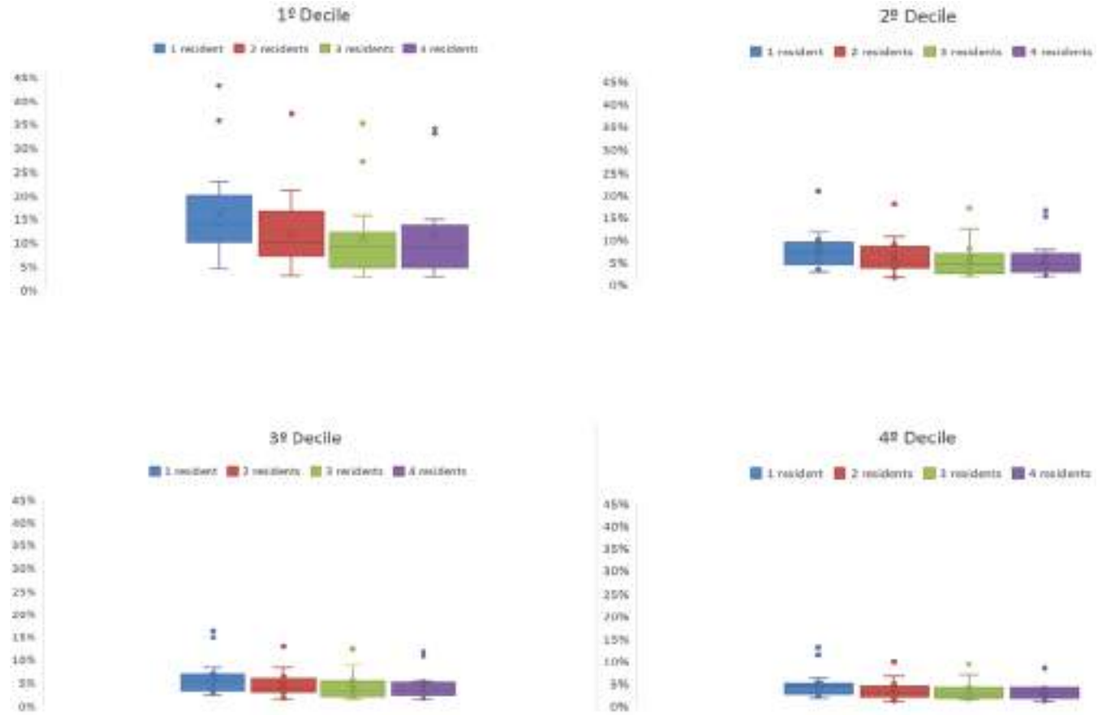


Figure 49 - Dispersion of the affordability indicator by income decile and number of household residents
Source: Based on IBNET and SEDLAC

The charts in Figure 49 represent the dispersion of values of the affordability indicator. The median values show that the highest income impairments are in households with only one resident, with a declining trend as the number of residents per household grows. The first income decile is an exception and shows an inverse trend, with a median value regarding four resident households higher than three resident households. In the other deciles, households with three and four residents have similar behavior. Another important aspect to be evaluated is the dispersion of values according to the number of residents per household: while dispersion regarding four resident households is very low, three resident households presented the greater dispersion for the four deciles. The number of outliers varied between one and two countries on all charts, with interchanges between Brazil, Colombia and the Dominican Republic.

The estimates presented give an overview of possible affordability problems in Latin America and the Caribbean, even though only capitals have been considered (as no surveys with national coverage are available for the region). There is a significant discussion about the establishment of maximum thresholds for the income impairment to define if services can be considered affordable or not. In this report, no limits were defined – it was considered that the definition of such a parameter should be based on context, considering a series of local factors and the participation of society.

24 As the calculation regarding the capitals of Honduras and the Dominican Republic was not possible, the biggest cities with available data in these countries were chosen, respectively San Pedro Sula and Santiago.
25 The International Benchmarking Network for Water and Sanitation Utilities (https://www.ib-net.org/).
26 Socio-Economic Database for Latin America and the Caribbean (CEDLAS and The World Bank) May 2017 version.

The 2017 JMP report provides some affordability estimates showing that a significant proportion of the Latin American and Caribbean population have an income impairment higher than 5%, less severe only than Central and Southern Asia. However, it is important to note that the JMP used total household expenditure in the denominator, not income, and this difference in criteria makes it difficult to compare results of the two reports. Another study[27] indicated a variation in the affordability indicator (expenditure / income) in Latin America and the Caribbean between 4% and 12% for the poorest 20% of the population connected to a network. Although direct comparison with the methodology used in this report is not possible, the values present some convergence.

It is important to highlight that the estimates presented concern only populations connected to water and sanitation networks – informal providers or self-service were not included. However, it is well-known that populations using such services are the most burdened by their water and sanitation expenditures, which may have a strong impact on the affordability landscape in countries such as Haiti and Nicaragua, which have a large population without access to formal systems.

SOCIAL TARIFF

An important factor not considered in affordability values is the possible existence of social tariffs or similar mechanisms that aim to favor the poorest. Several countries adopt some type of tariff discount to lower income populations according to socioeconomic or geographic criteria, such as Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, El Salvador, Guatemala, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela [28].

All these cases correspond to subsidy models to demand and work with partial discounts or even complete exemption from payment in more specific cases, but the factors considered in their design varies. The origin of resources is also variable, from governmental resources, as in the case of Chile, to cross-subsidies. In the latter, different models are used: higher prices for the population with better socioeconomic level (Colombia); subsidy between cities (Brazil); subsidies from industrial and commercial consumption to residential consumption and from users who consume more for those who consume less, in the progressive block tariff structures (different countries). It is important to note that various types of subsidies can coexist within the same tariff policy.

Another important issue in this discussion is how to focus on the population that could receive the benefit. There are several types of criteria: socioeconomic criteria based on registrations in social programs (Brazil), registers made by the service provider itself (Argentina), income criteria (Chile), benefits for the elderly population (Honduras and Uruguay) and intraurban location, based on the subdivision of cities into classes (Colombia and Ecuador) or focused on favelas (Panama, Venezuela and Nicaragua).

All eligibility criteria may have distortions and select false positives (when a person who does not need the benefit receives it) or false negatives (when someone who needs the benefit is excluded). Although both must be avoided, from a human rights perspective, it is fundamental that those who need the benefits have access to them, thus false negatives are more serious than false positives.

There is no ideal solution for protecting the most vulnerable populations from receiving an unaffordable service, either in relation to the type of subsidy or the eligibility criteria, as this varies according to local conditions. What is essential is to create conditions so that all people, regardless of their characteristics, origin, or social class, have access to affordable and quality services.

27 SMETS, H. **Quantifying the affordability standard**, in Langford, M., & Russell, A. (Eds.). (2017). The Human Right to Water: Theory, Practice and Prospects. Cambridge: Cambridge University Press. doi:10.1017/9780511862601

28 SMETS, H. – see previous footnote.

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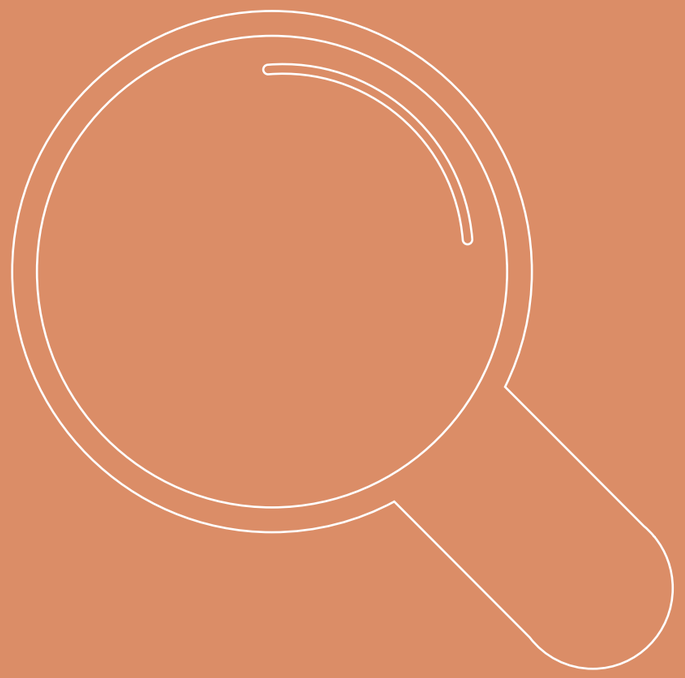
5 | INSTITUTIONAL EVALUATION OF WASH SECTORS FOR COMPLIANCE WITH SDG AND HRWS[29]



5.1 | Access to WASH services recognized as human rights

In 2010, through Resolution 64/292, the United Nations General Assembly explicitly recognized the Human Rights to Safe Drinking Water and Sanitation (HRWS). The same principles of other human rights apply to the HRWS: non-discrimination and equality; access to information and transparency; participation; accountability; sustainability and progressive realization with the maximum resources available. The normative content of HRWS includes availability, physical accessibility, quality and safety, affordability, acceptability, dignity and privacy.

The signatory States are obligated to observe the International Covenant on Economic, Social and Cultural Rights (ICESCR) but are free to choose the ways of implementation, considering the principles and normative content of human rights. In this sense, the framework of HRWS in national legal systems is especially relevant, as they will provide detailed guidelines according to each context and guidance in the legal actions regarding these rights. Recognition must be made in the legislative sphere, through the Constitution or ordinary legislation, and the operationalization should be primarily the responsibility of the Executive Branch, through policies and regulations.

In Latin America and the Caribbean, some progress has been made in the formal recognition of the HRWS:

- **Ecuador** recognized these rights in Article 12 of the Constitution of the Republic, in August 2014. In the Organic Law of Water Resources, Uses and Utilization of Water approved in 2014, principles, concepts, rights and duties are defined in accordance with the principles and contents of the HRWS of the UN Resolution, which fostered these changes in the country.
- In **Cuba**, since 1976, the right to water and sanitation is guaranteed by the Constitution. Access must be guaranteed and subsidized by the State as a public service. In addition, the Water Resources Law was recently changed in a way that explicitly determined the access to water and sanitation as a human right.
- In **Guatemala**, the National Drinking Water and Sanitation Policy, approved in 2013, recognizes the access to water and sanitation as a human right. It also recognizes the UN Resolution 64/292.
- **Mexico** amended its constitution in 2012 to make explicit the recognition of the access to sufficient, clean, acceptable and affordable water and sanitation for all as a right and responsibility of the State.
- In **Venezuela**, only the access to water was formally recognized as a human right in a constitutional amendment made in 1999. The Water Law and the National Human Rights Plan also address this issue.

29 This chapter was based on data from the report "Global Analysis and Assessment of Sanitation and Drinking-Water" (WHO), available at: http://www.who.int/water_sanitation_health/monitoring/investments/glaas/en/

- In **Jamaica**, legislation recognizes the access to water and sanitation as a human right.
- In **Costa Rica**, the Constitution recognizes the access to water and sanitation as a human right, even though implicitly to the right to health.
- In addition to the above-mentioned countries, Bolivia, Colombia, Nicaragua, Panama and Uruguay explicitly recognize the access to water and sanitation as rights in their Constitutions, and the Dominican Republic considers these rights as part of other rights and principles [30].

The recognition of HRWS in national legislations is essential, but it is only the first step. It is necessary that various institutions in different spheres of activity incorporate the understanding of these rights.

The Judiciary can contribute to real progress in the observance of human rights, including HRWS. As an illustration, Table 6 shows a compilation of 25 judgments made in nine Latin American and Caribbean countries, including seven cases in Argentina and Colombia, three in Costa Rica, two in Brazil and Chile and one case in Ecuador, Panama, Peru and Venezuela. Except for "participation", all other principles and elements of the normative content were addressed. The most frequent is "availability", present in ten cases, followed by "quality and safety" and "affordability", each one appearing seven times.

COUNTRY	NUMBER OF JUDGMENTS	NON- DISCRIMINATION AND EQUALITY	AVAILABILITY	ACCEPTABILITY	SUSTAINABILITY	QUALITY AND SAFETY	ACCOUNTABILITY	AFFORDABILITY	PHYSICAL ACCESSIBILITY	ACCESS TO INFORMATION	PARTICIPATION
ARGENTINA	7	2	4	1	2	3	3	2	-	-	-
COLOMBIA	7	-	3	-	-	2	1	2	2	1	-
COSTA RICA	3	-	1	-	-	1	-	-	1	-	-
BRAZIL	2	-	-	-	-	-	-	2	-	-	-
CHILE	2	-	-	-	-	-	-	-	2	-	-
ECUADOR	1	-	1	-	-	-	-	-	-	-	-
PANAMA	1	-	1	-	-	-	-	-	-	1	
PERU	1	-	-	-	1	1	-	-	-	-	-
VENEZUELA	1	-	-	-	-	-	-	1	-	-	-
TOTAL		2	10	1	3	7	4	7	5	2	0

Table 6 - Compilation of judged cases related to HRWS in Latin American and Caribbean countries
Source: Adapted from "The Human Rights to Water and Sanitation in Courts Worldwide: A Selection of National, Regional and International Case Law. WashUnited & WaterLex" (2014)

JUDGED CASES REGARDING HRWS

In the city of Cordoba, Argentina, a group of families living in a situation of unemployment and financial difficulties had their water supply cut off by the Private Concessionaire, due to unpaid bills. The families appealed to the Courts, claiming that the interruption of the service was illegal. The Court held that there were two issues at stake: (i) the possibility of water supply interruption or restriction in the event of non-payment; (ii) guarantee of a minimum volume of water for citizens. The decision was partially favorable to the plaintiffs. The legality of water cutoff in case of non-payment was recognized, but it was determined that families should receive a minimum of 200 liters per household per day while the disconnection lasts.

In São Paulo, Brazil, the Sanitation Concessionaire cut off the water supply of a Philanthropic Hospital due to non-payment of invoices. The Hospital filed a legal action to obtain the reconnection of water and, in the first instance, the court considered the cutoff legal, but the decision was subsequently reviewed by the Superior Court of Justice. The final decision was based on the understanding of the impossibility of interruption of essential public services, as was the case of the Hospital.

In Panama, three non-governmental organizations, after visiting prison facilities, filed a collective action in the Supreme Court of Justice against the State Minister of Justice and the Penitentiary System General Director, due to the deplorable conditions prison inmates were living in, especially regarding sanitation and water supply. The Court understood that the rights of the inmates were being violated and determined a series of measures to guarantee their rights.

These examples illustrate the importance of disseminating the fundamentals of the HRWS, so that people, especially those in more vulnerable situations, have the elements to seek their rights when these are violated, including in Courts.

Source (case studies): The Human Rights to Water and Sanitation in Courts Worldwide: A Selection of National, Regional and International Case Law. WashUnited & WaterLex (2014).

30 LANGFORD, M., & RUSSELL, A. Introdcution. in Langford, M., & Russell, A. (Eds.). (2017). **The Human Right to Water: Theory, Practice and Prospects.** Cambridge: Cambridge University Press. doi:10.1017/9780511862601)

5.2 | Staff

Human resources are essential to ensure the formulation, implementation, evaluation and quality of public services. Nevertheless, the lack of attractiveness of the sector due to **low pay, wages and benefits** in comparison with other segments of the economy is identified as the main obstacle for the provision of high-quality services in many countries. It contributes to the turnover of professionals and, in turn, to the deterioration of the services provided.

Due to the peculiar nature of the WASH sector and its long-term development processes, it requires specific and continuous **training. Capacity building** is a challenge pointed out in many countries, going from the lack of sanitary engineering courses (Jamaica) and postgraduate courses related to WASH (Costa Rica) - which limit both technical/ engineering and social sciences training - to the criticism of the distance between the academy and institutions of the sector (Ecuador). This situation made some governments seek training institutions abroad, as in the case of Paraguay, which made a partnership with the University of São Paulo (USP) in order to better qualify its technical staff. In more extreme cases, emigration of qualified personnel affects the sector (Jamaica and Haiti).

Political dynamics can also be a cause of human resources low qualification. In Mexico, the constant **political changes due to electoral cycles at the municipal level** promotes a high turnover in the WASH sector staff, hindering the continuity and stability of programs and actions. Another political and administrative factor causes a shortage of human resources in the sector: in Colombia, 980 of 1102 municipalities are classified in a special class and have **low institutional capacity**, hindering the attraction and retention of qualified professionals. Although two specific cases have been mentioned, political shifts and low institutional capacity were reported in several countries.

Among other institutional problems, services **in rural areas** face further obstacles to attract and retain professionals, often depending on unqualified volunteers. Surveillance and monitoring of water quality in rural areas are hampered mainly because of the lack of skilled professionals.

5.3 | Regulation

Regulation in the WASH sector in Latin America and the Caribbean is incipient, but it is essential to ensure compliance with the HRWS [31]. Although the type and form of regulation vary widely across countries, three typologies can be identified [32]: (i) smaller unitary countries, in which national regulation predominates, half of which are sectoral and half multisectoral; (ii) larger unitary countries with a predominance of national and sectoral regulation, except for one case of multisectoral regulation; (iii) federal states with subnational, sectorial and multisectoral regulation. Table 7 shows the distribution of countries according to the type of regulation.

31 UNHRC, U. N. H. R. C. **Report of the Special Rapporteur on the human right to safe drinking water and sanitation (Service Regulation)**. Geneva: [s.n.], 2017.
32 CEPAL. **Latin America y el Caribbean hacia los Objetivos de Desarrollo Sostenible em agua y saneamento: Reformas recientes de las politicas sectoriales.** Serie Recursos Naturales e Infraestructura. 2017.

COUNTRY	PREDOMINANT LEVEL OF SERVICE PROVIDERS	REGULATION
SMALLER UNITARY STATES		
COSTA RICA	National and municipalities	Autoridad Reguladora de los Servicios Públicos (ARESEP): nacional y multisectorial
CUBA	Provincial	None
ECUADOR	Municipalies	Ente Municipal de Regulación y Control (EMAPAG-EP): municipal and sectoral - Agencia de Regulación y Control del Agua (ARCA): nacional and sectoral
EL SALVADOR	National and municipalities	None
GUATEMALA	Municipalities	None
HAITÍ	Regional	None
HONDURAS	Municipalities (in transition)	Ente Regulador de los Servicios de Agua Potable y Saneamiento (ERSAPS): nacional and sectoral
NICARAGUA	Nacional, departaments and municipalities	Instituto Nicaragüense de Acueductos y Alcantarillado Sanitario (INAA): nacional and sectoral
PANAMÁ	Nacional	Autoridad Nacional de los Servicios Públicos (ASEP): nacional and multisectoral
PARAGUAY	Nacional and small service providers	Ente Regulador de Servicios Sanitarios (ERSSAN): nacional and sectoral
REPÚBLICA DOMINICANA	Regional and provincial	None
URUGUAY	Nacional (except Montevidéo)	Unidad Reguladora de Energía y Agua (URSEA): nacional and multisectoral
LARGER UNITARY STATES		
BOLIVIA	Municipalities	Autoridad de Fiscalización y Control Social de Agua y Saneamiento Básico (AAPS): nacional sectoral
CHILE	Regional	Superintendencia de Servicios Sanitarios (SISS): nacional and sectoral
COLOMBIA	Municipalities	Comisión de Regulación de Agua Potable y Saneamiento Básico (CRA): nacional and sectoral (regulation) Superintendencia de Servicios Públicos Domiciliarios (SSPD): nacional and multisectoral (control)
PERU	Municipalities	Superintendencia Nacional de Servicios de Saneamiento (SUNASS): nacional and sectoral
PAÍSES QUE ADOPTAN FORMA DE ESTADO FEDERATIVA		
ARGENTINA	Provincial (municipalities in some cases)	On provinces, grouped in the Asociación Federal de Entes Reguladores de Agua y Saneamiento (AFERAS): sectoral e multisectoral
BRASIL	States and municipalities	States (municipalities in some cases), grouped in the Associação Brazileira de Agências de regulação (ABAR): sectoral e multisectoral
MÉXICO	Municipalities	In some states
VENEZUELA	Regional	None

Table 7- Characterization of service providers and regulations of water and sanitation services by groups of countries
Source: Based on ECLAC (2017).

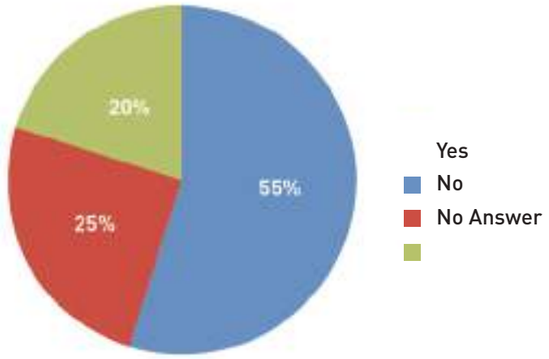
RACIONALIDAD DE LA REGULACIÓN

One of the fundamental issues about regulation is to justify its existence, that is, why it is important to regulate. The most frequent argument is the need to correct market failures, as WASH services are a natural monopoly. Thus, in theory, the provider can impose the price and quality of services on users. Therefore, regulation should focus on (artificially) promoting the balance between supply and demand, something that in other contexts would be achieved by the market. In this vision, regulation would be the only option for allocation of goods and services in the face of the impossibility of a virtuous market to do so. While dominant, this vision is the object of criticisms. The economist Joseph Stiglitz argues that, contrary to this more liberal view, even efficient markets may fail to produce socially just results [33]. In this sense, regulation might be necessary to achieve social goals. The guarantee of human rights is also another justification for regulation, as it would play a fundamental role in guaranteeing users affordability to WASH services, as well as other attributes of the HRWS[34]. Different institutional visions in Colombia regarding interruption of water supply illustrate the conflict between rationalities[35]. The Colombian Constitutional Court understands that there can be no cutoffs of the water supply for non-payment in cases of financial difficulty, based on the Human Right to Water. On the other hand, the Water and Sanitation Regulation Commission authorizes cutoffs in the event of non-payment, based on the Public Services Statute. Both have constitutional support to justify their decisions, which rely on different rationales. Although the regulator activities are visible to users connected to water and sanitation networks, there are, however, many challenges for regulating services in rural areas, small localities and with informal provision. By correcting market failures, regulation contributes to improve WASH services. However, in developing countries marked by inequalities in access, the biggest challenge is for the regulator to incorporate the human rights rationality to protect the most disadvantaged and at-risk populations.

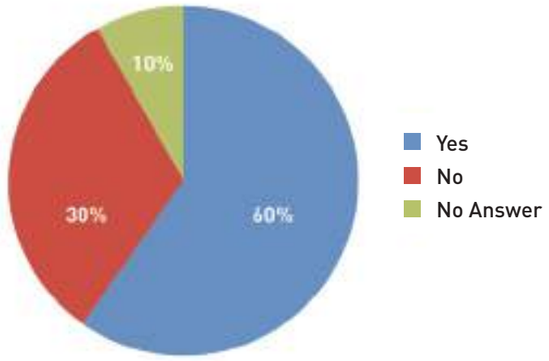
Figure 50 shows that not all regulators are responsible for setting tariffs, but the majority is responsible for overseeing service coverage or quality, with more than half of the countries having legally binding national standards for quality. The mismatch between overseeing services coverage or quality and fixing tariffs may jeopardize the work of the regulator, as the possibility of defining economic rules is fundamental for obtaining and directing resources by service providers.

33 STIGLITZ, J. **Regulation and Failure**, in: MOSS, D.; CISTERTINO, J. New Perspectives on Regulation. Cambridge, MA; The Tobin Project, 2009
34 UNHRC, U. N. H. R. C. **Report of the Special Rapporteur on the human right to safe drinking water and sanitation (Service Regulation).** Geneva: [s.n.], 2017.
35 LÓPEZ-MURCIA, J. D. **Regulatory Agencies and Courts in the South: The Overlaps in Colombian Water Regulation**, in: Journal of Politics in Latin America, 2013, 5, 2, 105-132.

IS A REGULATORY AUTHORITY OR REGULATOR RESPONSIBLE FOR SETTING TARIFFS?



ARE THERE LEGALLY BINDING NATIONAL STANDARDS FOR QUALITY OF SERVICE?



IS A REGULATORY AUTHORITY OR REGULATOR RESPONSIBLE FOR OVERSEEING SERVICE COVERAGE OR QUALITY OF SERVICE DELIVERY?

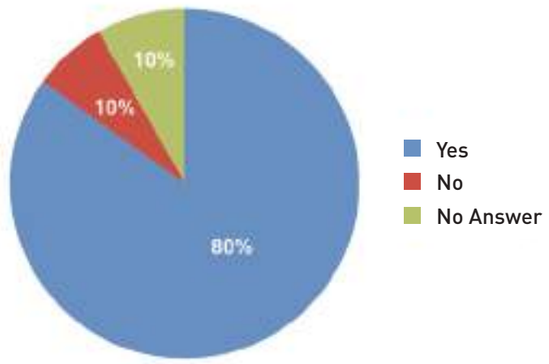
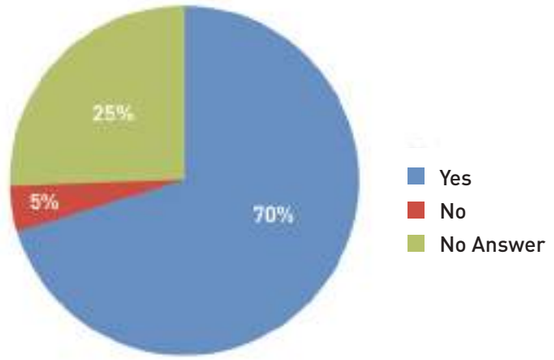


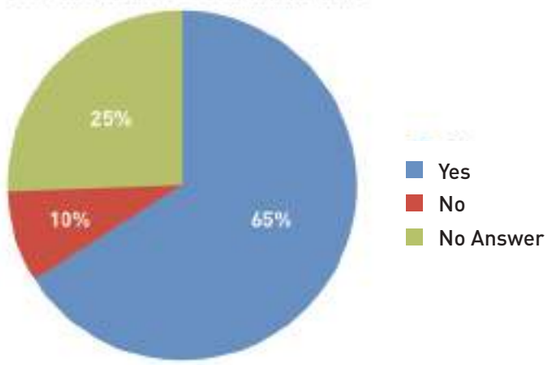
Figure 50 - Responsibilities of regulators in 20 countries
Source: GLAAS (2016) – surveys regarding 20 Latin American and Caribbean countries.

One of the principles of regulation is the autonomy to exercise regulatory activities. It ensures that the decision-making process is not unduly biased by interests, increasing security and predictability of the rules. This is important because investments in water and sanitation have a long-term nature. It is possible to infer the degree of autonomy of regulators using some indicators. Figure 51 suggests a certain autonomy of Latin American and Caribbean regulators, as shown by the following attributes: 70% of the regulators are located in a different government institution from the service providers and 65% have the authority to report findings without first gaining clearance or permission from government institutions. On the other hand, only 45% were authorized to hire and dismiss employees without first obtaining clearance or permission from government institutions, and only 25% had funding independent from the government's budget.

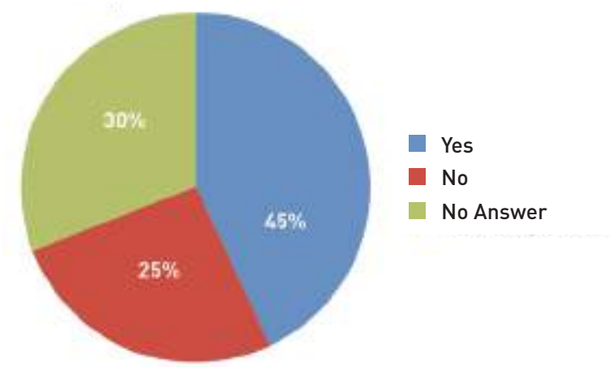
IS THIS REGULATORY AUTHORITY LOCATED IN A DIFFERENT INSTITUTION (E.G. MINISTRY) FROM THE SERVICE PROVIDERS THAT ARE BEING REGULATED?



DOES THE REGULATORY AUTHORITY HAVE THE AUTHORITY TO REPORT FINDINGS WITHOUT GAINING CLEARANCE OR PERMISSION FROM GOVERNMENT INSTITUTIONS?



DOES THE REGULATORY AUTHORITY HAVE THE AUTHORITY TO HIRE AND DISMISS EMPLOYEES WITHOUT CLEARANCE OR PERMISSION FROM GOVERNMENT INSTITUTIONS?



IS FUNDING INDEPENDENT FROM THE GOVERNMENT´S BUDGET?

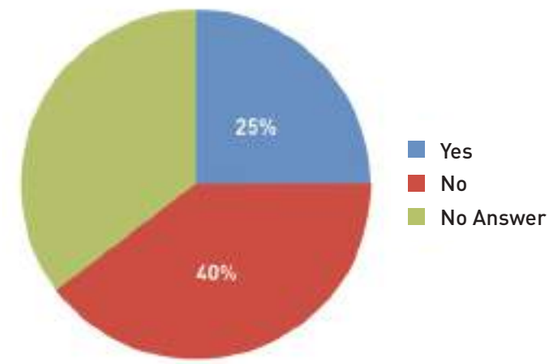


Figure 51- Responsibilities of regulators in 20 countries
Source: GLAAS (2016) – surveys regarding 20 Latin American and Caribbean countries.

Figures 52 and 53 show the type of activity performed by regulators, both for water and sanitation services. What stands out most is the inequality between the activities in these two services. The performance in urban and rural areas is even more unbalanced: only six countries have some type of regulatory activity in rural areas and, even in these cases, it is always inferior to urban areas.

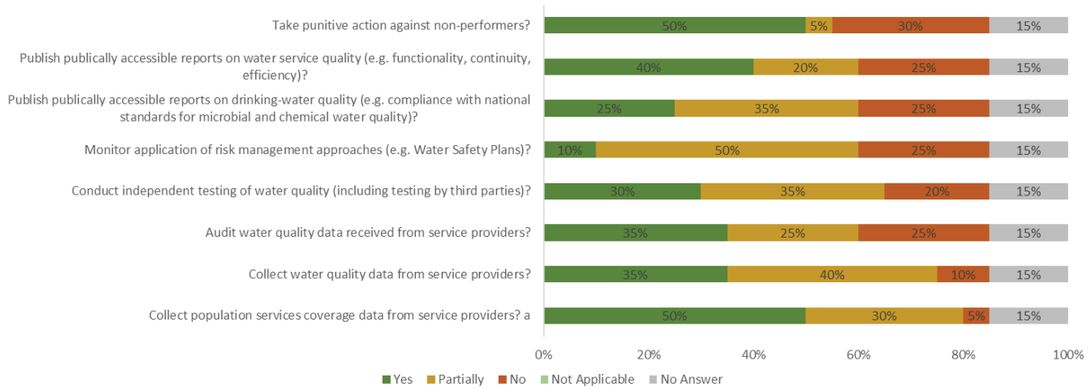


Figure 52 - Type of regulatory activities performed by water services regulators
Source: GLAAS (2016) – surveys regarding 20 Latin American and Caribbean countries.

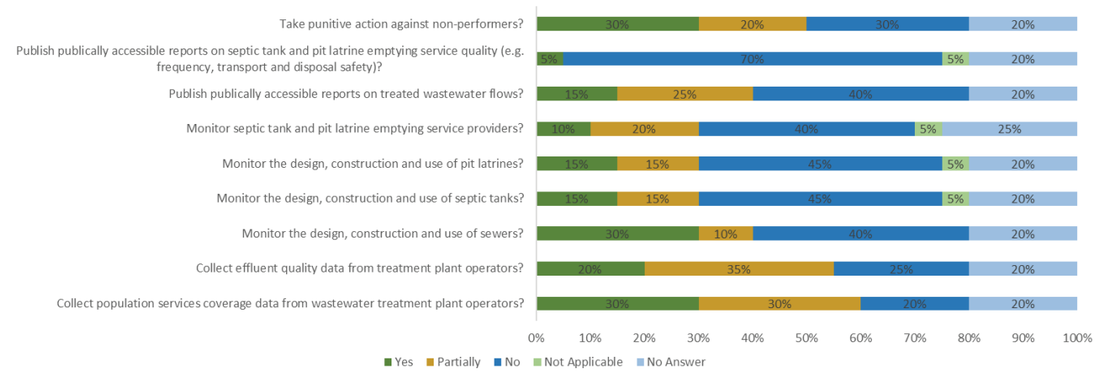


Figure 53 - Type of regulatory activities performed by sanitation services regulators
Source: GLAAS (2016) – surveys regarding 20 Latin American and Caribbean countries.

The inequalities between urban and rural areas and between water and sanitation may be related to the availability of these services, which reinforces the idea that regulation is established only after the provision of formal services. However, the regulator can induce growth in the access to services and reduce inequalities. Therefore, it is important to expand regulation even if formal services are not universal.

5.4 | Financing

In general, the sources of financing for drinking-water and sanitation services include tariffs, taxes and transfers. In this regard, the following forms of financing were considered in this report, based on GLAAS 2017:

- Tariffs: funds originating from the payments made by users for getting access to and for using the services. It also includes household expenses;
- Taxes: funds originating from taxes and other sources by central, regional and local governments. Do not include repayable financing;
- Transfers: funds from external donors, multilateral agencies (including through subsidies or guarantees), nongovernmental organizations, civil society organizations and individuals. Do not include repayable financing;
- Loans: include all types of loans and repayable financing, including in favorable conditions.

Considering the source of financing is essential because it has a significant influence on the redistributive effect of public policies. Among the 13 countries with available data on water and sanitation expenditures (including investments and operational costs), eight reported the government budget as the main source of financing, four countries reported other internal sources of services (tariffs), and one country reported loans as the main source of funds (Figure 54).

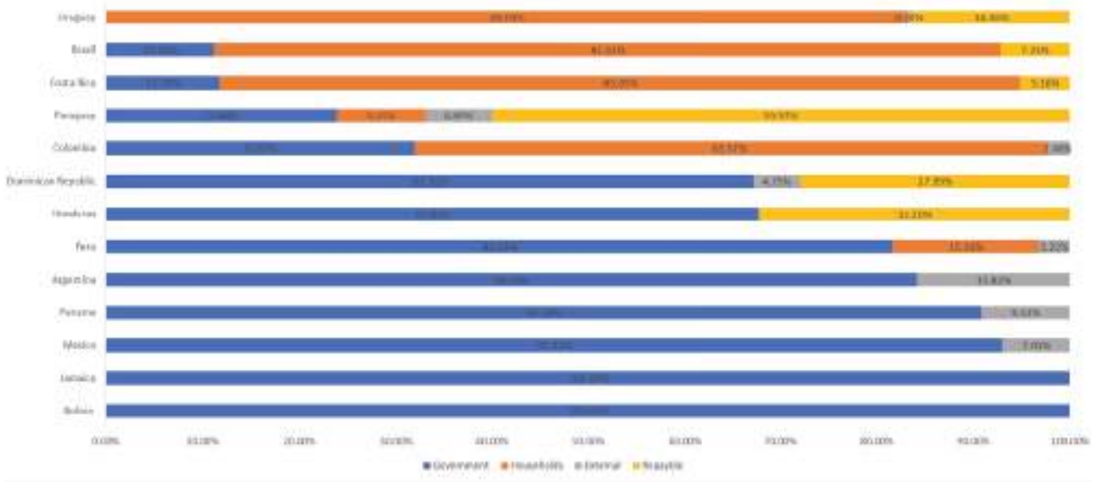


Figure 54 - Expenditure on water and sanitation services according to sources of financing
Source: GLAAS (2017)

Considering all these countries together, the main source of financing is tariffs (62%), followed by taxes (30%), loans (6%) and transfers (2%). These results are very close to the global picture. However, it is worth noting that Brazil represents almost 70% of expenditures on water and sanitation. Excluding this country, the main source of financing becomes taxes, with almost 70% of the total, followed by tariffs (22%), transfers (6%) and loans (3%) (Figure 55).

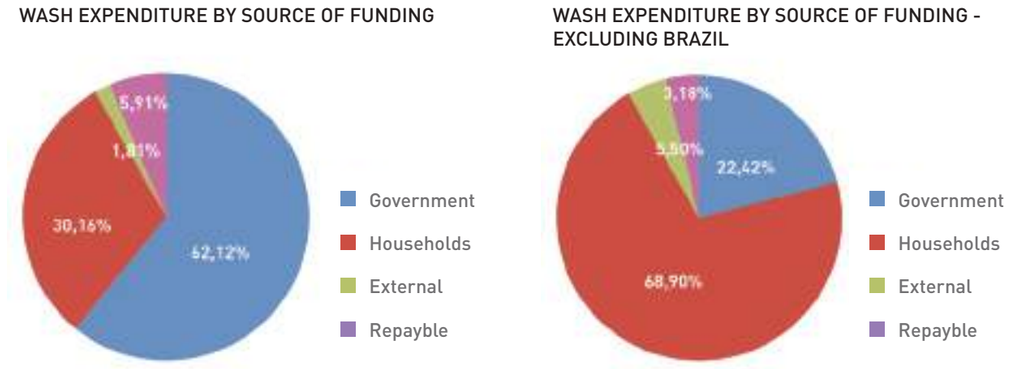


Figure 55 - Expenditure on water and sanitation services according to sources of financing in Latin America and the Caribbean (left) and Latin America and the Caribbean, excluding Brazil (right)
Source: GLAAS (2017)

The Latin American and Caribbean countries are substantially dependent on taxes to finance water and sanitation services. Although this is not a problem in itself, it can hinder the planning and stability of spendings and investments. It may also imply greater bureaucratic rigidity in the use of resources, which can hamper the sector's sustainability, especially considering maintenance and operational expenses, besides investments.

In order to evaluate expenditures and allow comparisons between countries, two parameters are interesting: total expenditure in relation to GDP and per capita expenditure (Figure 56). Expenditures in relation to GDP ranged between 0.19 and 4.20%. The average proportion is 1.25%, with most countries reporting expenditures between 0.50% and 1.40% of their GDP. The countries with the highest proportions are Jamaica and Panama and the smallest are Mexico, Dominican Republic and Argentina. Annual per capita expenditures ranged from US$ 15 to US$ 196, with an average of US $72. Jamaica, Uruguay, Brazil and Panama had the highest values, while Honduras, Mexico, Dominican Republic and Bolivia exhibited the lowest ones. Nevertheless, it should be noted that expenditures, both in relation to GDP and per capita, are not directly related to indicators of access.

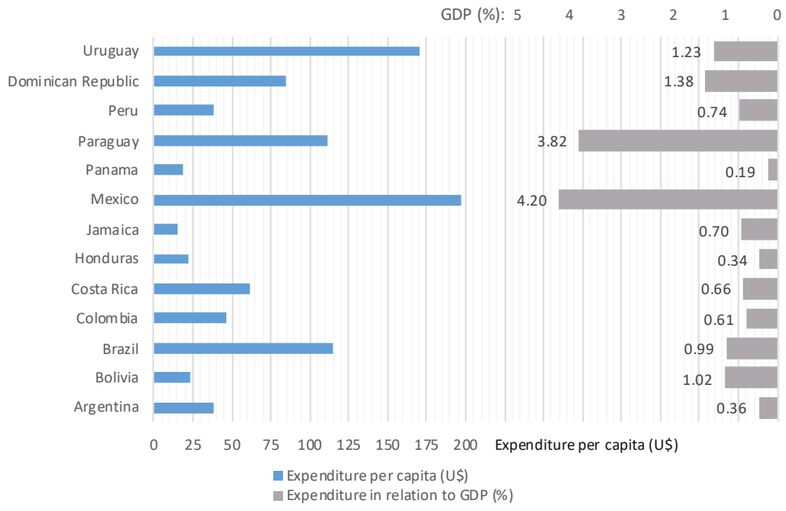


Figure 56 - Annual expenditure in relation to GDP (%) and per capita (US$)
Source: GLAAS (2017)

INVESTMENTS

The availability of resources, especially for investments in coverage expansion, is often cited as the main obstacle to meeting the goals of universalizing access, eliminating inequalities and improving the quality of services. However, even with available resources, many countries report difficulties. Waste and misuse of resources contribute to the delay in meeting the targets.

Several factors are mentioned to justify the difference between budget and expenditure execution: low institutional capacity, lack of project management capacity, lack of information for decision making, lack of skilled labor or engineering firms, problems with expropriation of land, slowness in environmental licensing processes, among others.

In this sense, providing institutional and management capacity for the WASH sector is as important as guaranteeing dependable sources of financing. It must incorporate the perspective of quality of WASH services and their social and environmental functions, going beyond physical infrastructures and construction works.

Tables 8 to 11 associate financial sufficiency to meet targets and other institutional dimensions. There is a significant inequality in the reported financial sufficiency between urban and rural areas and between water and sanitation services. Among the 17 evaluated countries, seven reported having sufficient resources for water service in urban areas, four for sanitation in urban areas, two for water in rural areas and only one for sanitation in rural areas. Only Panama claims to have enough resources to meet targets for water and sanitation both in urban and rural areas.

According to Table 8, differences between water in urban areas and sanitation in rural areas are particularly significant. In the former, most countries are positioned in the quadrants representing positive situations (green); in the latter, not a single country is positioned in a similar situation, and most of them are positioned in the negative quadrants (red). It is important to highlight that countries are generally better positioned in relation to the existence of plans than to financial sufficiency, which suggests that some plans do not aim for universalization or do not have the sources of funds for the proposed actions.

FINANCING	SANITATION - URBAN				SANITATION - RURAL			
	MORE THAN 75% OF WHAT IS NEEDED		Colômbia Peru	Chile Panamá	MORE THAN 75% OF WHAT IS NEEDED		Panamá	
	BETWEEN 50% AND 75% OF WHAT IS NEEDED		Argentina Bolívia Brasil	Cuba	BETWEEN 50% AND 75% OF WHAT IS NEEDED	Honduras	Bolívia Brasil	Cuba Paraguai
	LESS THAT 50% OF NEEDS	Costa Rica Rep. Dominicana Haiti Honduras Jamaica Uruguai		México Paraguai Venezuela	LESS THAT 50% OF NEEDS	Argentina Colômbia Costa Rica Rep. Dominicana El Salvador Haiti Jamaica	Peru Venezuela	Chile México
		NO AGREED PLAN	AGREED BUT INSUFFICIENTILY IMPLEMENTED	AGREED AND CONSISTENTLY FOLLOWED		NO AGREED PLAN	AGREED BUT INSUFFICIENTILY IMPLEMENTED	PLÁNS ACORDADOS Y EJECUTADOS
	EXISTENCE OF PLAN				EXISTENCE OF PLAN			

FINANCING	WATER - URBAN				WATER - RURAL			
	MORE THAN 75% OF WHAT IS NEEDED	Haiti	Argentina Colômbia Peru	Chile Panamá Paraguai	MORE THAN 75% OF WHAT IS NEEDED	Honduras	Panamá	Chile
	BETWEEN 50% AND 75% OF WHAT IS NEEDED	Costa Rica Rep. Dominicana	Bolívia Brasil	Cuba Venezuela	BETWEEN 50% AND 75% OF WHAT IS NEEDED	Costa Rica Rep. Dominicana	Bolívia Brasil Peru	Cuba Paraguai
	LESS THAT 50% OF NEEDS	Honduras Jamaica Uruguai		México	LESS THAT 50% OF NEEDS	Argentina Colômbia El Salvador	Jamaica	México Venezuela
		NO AGREED PLAN	AGREED BUT INSUFFICIENTILY IMPLEMENTED	AGREED AND CONSISTENTLY FOLLOWED		NO AGREED PLAN	AGREED BUT INSUFFICIENTILY IMPLEMENTED	PLÁNS ACORDADOS Y EJECUTADOS
	EXISTENCE OF PLAN				EXISTENCE OF PLAN			

Table 8 - Association between financial sufficiency to meet targets and existence of plans.
Source: Based on GLAAS (2017)

Table 9 associates the financial sufficiency to meet targets and coverage of operation and maintenance costs by tariffs. Once again, significant inequalities are observed between water and sanitation services and between urban and rural areas. In this case, there are more countries well positioned in relation to coverage of costs by tariff than to financial sufficiency. It suggests that tariffs are insufficient to generate the resources needed to make investments.

FINANCING	SANITATION - URBAN			
MORE THAN 75% OF WHAT IS NEEDED	Panamá	Peru	Chile Colômbia	
BETWEEN 50% AND 75% OF WHAT IS NEEDED		Bolívia Cuba	Argentina Brasil	
LESS THAT 50% OF NEEDS	Rep. Dominicana México Paraguai Venezuela	Honduras	Costa Rica Jamaica Uruguai	
	COVERS LESS THAN 50% OF COSTS	COVERS BETWEEN 50% AND 80% OF COSTS	COVERS OVER 80% OF COSTS	
	TARIFF			

FINANCING	SANITATION - RURAL			
MORE THAN 75% OF WHAT IS NEEDED	Panamá			
BETWEEN 50% AND 75% OF WHAT IS NEEDED	Bolívia Paraguai	Bolívia Cuba	Honduras	
LESS THAT 50% OF NEEDS	Rep. Dominicana Peru Venezuela	México	Argentina Colômbia Costa Rica	
	COVERS LESS THAN 50% OF COSTS	COVERS BETWEEN 50% AND 80% OF COSTS	COVERS OVER 80% OF COSTS	
	TARIFF			

FINANCING	WATER - URBAN			
MORE THAN 75% OF WHAT IS NEEDED	Paraguai	Haiti Panamá Peru	Argentina Chile Colômbia	
BETWEEN 50% AND 75% OF WHAT IS NEEDED	Rep. Dominicana Venezuela	Bolívia Cuba	Brasil Costa Rica	
LESS THAT 50% OF NEEDS	México	Honduras	Jamaica Uruguai	
	COVERS LESS THAN 50% OF COSTS	COVERS BETWEEN 50% AND 80% OF COSTS	COVERS OVER 80% OF COSTS	
	TARIFF			

FINANCING	WATER - RURAL			
MORE THAN 75% OF WHAT IS NEEDED		Panamá	Chile	
BETWEEN 50% AND 75% OF WHAT IS NEEDED	Bolívia Rep. Dominicana Haiti Honduras Paraguai	Brasil Cuba	Costa Rica	
LESS THAT 50% OF NEEDS	Venezuela	México	Argentina Colômbia Jamaica	
	COVERS LESS THAN 50% OF COSTS	COVERS BETWEEN 50% AND 80% OF COSTS	COVERS OVER 80% OF COSTS	
	TARIFF			

Table 9- Association between financial sufficiency to meet targets and coverage of operation and maintenance costs by tariffs
Source: Based on GLAAS (2017)

Table 10 shows the association between financial sufficiency to meet targets and specific measures for targeting vulnerable populations. Among all countries evaluated, only Costa Rica reports having measures and applying them to reach disadvantaged and at-risk populations. Five countries indicate the existence of measures, but with no consistent application, and ten countries report not having such measures. When this variable is crossed with the financial sufficiency variable, no country appears in the most positive quadrant (dark green). There are three countries in the intermediate-positive quadrants (light green) regarding water in urban areas, one in the quadrants related to sanitation in urban areas and water in rural areas and no countries in the quadrants related to sanitation in rural areas. It can be inferred that few countries have enough resources to meet the targets but, even among those that have it, the actions foreseen and applied to reach vulnerable groups are almost non-existent. This may reinforce or even worsen inequalities in the access to WASH services and the compliance with human rights..

FINANCING	SANITATION - URBAN			
MORE THAN 75% OF WHAT IS NEEDED	Chile Colômbia Panamá	Peru		
BETWEEN 50% AND 75% OF WHAT IS NEEDED	Argentina Cuba	Brasil		
LESS THAT 50% OF NEEDS	Rep. Dominicana Haiti Honduras Jamaica Uruguai	México Paraguai Venezuela	Costa Rica	
	THERE ARE NO MEASURES	THERE ARE MEASURES, BUT THEY ARE NOT APPLIED CONSISTENTLY	THERE ARE MEASURES AND THEY ARE APPLIED	
	FINANCING FOR VULNERABLE GROUPS			

FINANCING	SANITATION - RURAL			
MORE THAN 75% OF WHAT IS NEEDED	Panamá			
BETWEEN 50% AND 75% OF WHAT IS NEEDED	Cuba Honduras	Brasil Paraguai		
LESS THAT 50% OF NEEDS	Argentina Chile Colômbia Rep. Dominicana El Salvador Haiti Jamaica	México Peru Venezuela	Costa Rica	
	THERE ARE NO MEASURES	THERE ARE MEASURES, BUT THEY ARE NOT APPLIED CONSISTENTLY	THERE ARE MEASURES AND THEY ARE APPLIED	
	FINANCING FOR VULNERABLE GROUPS			

FINANCING	WATER - URBAN			
MORE THAN 75% OF WHAT IS NEEDED	Argentina Chile Colômbia Haiti Panamá	Paraguai Peru		
BETWEEN 50% AND 75% OF WHAT IS NEEDED	Cuba Rep. Dominiciana Haiti Panamá	Brasil Venezuela	Costa Rica	
LESS THAT 50% OF NEEDS	Honduras Jamaica Uruguai	México		
	THERE ARE NO MEASURES	THERE ARE MEASURES, BUT THEY ARE NOT APPLIED CONSISTENTLY	THERE ARE MEASURES AND THEY ARE APPLIED	
	FINANCING FOR VULNERABLE GROUPS			

FINANCING	WATER - RURAL			
MORE THAN 75% OF WHAT IS NEEDED	Chile Panamá			
BETWEEN 50% AND 75% OF WHAT IS NEEDED	Cuba Rep. Dominicana Haiti Honduras	Brasil Paraguai Peru	Costa Rica	
LESS THAT 50% OF NEEDS	Argentina Colômbia El Salvador Jamaica	México Venezuela		
	THERE ARE NO MEASURES	THERE ARE MEASURES, BUT THEY ARE NOT APPLIED CONSISTENTLY	THERE ARE MEASURES AND THEY ARE APPLIED	
	FINANCING FOR VULNERABLE GROUPS			

Table 10 - Association between financial sufficiency to meet targets and specific measures for targeting vulnerable populations
Source: Based on GLAAS (2017)

Table 11 shows that, in general, the community and user participation levels are moderate to low. Only Panama and Venezuela reported a high participation level in all situations. While Panama reported having sufficient financing and appears in the most positive quadrant (dark green), Venezuela reported no financial resources and it is in the intermediate-negative quadrant (yellow). It is not possible to make inferences about the relation between financial sufficiency and level of participation, although it may have an impact on the quality of expenditures.

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FINANCING	SANITATION - URBAN				SANITATION - RURAL			
	MORE THAN 75% OF WHAT IS NEEDED	Chile	Colômbia Peru	Panamá	MORE THAN 75% OF WHAT IS NEEDED			Panamá
	BETWEEN 50% AND 75% OF WHAT IS NEEDED	Bolívia	Argentina Brasil Cuba		BETWEEN 50% AND 75% OF WHAT IS NEEDED	Honduras Paraguai	Bolívia Brasil Cuba	
	LESS THAT 50% OF NEEDS	Costa Rica Haiti Honduras México	Jamaica Paraguai Uruguai	Venezuela	LESS THAT 50% OF NEEDS	Argentina Colômbia Costa Rica Rep. Dominicana El Salvador Haiti	Jamaica México Peru	Venezuela
		LOW	MODERATE	HIGH		LOW	MODERATE	HIGH
	PARTICIPACIÓN				PARTICIPACIÓN			

FINANCING	WATER - URBAN				WATER - RURAL			
	MORE THAN 75% OF WHAT IS NEEDED	Chile	Argentina Colômbia Paraguai Peru	Panamá	MORE THAN 75% OF WHAT IS NEEDED		Chile	Panamá
	BETWEEN 50% AND 75% OF WHAT IS NEEDED	Bolívia Brasil Cuba	Brasil Cuba	Venezuela	BETWEEN 50% AND 75% OF WHAT IS NEEDED	Costa Rica Rep. Dominicana Haiti	Bolívia Brasil Cuba Paraguai Peru	Honduras
	LESS THAT 50% OF NEEDS	Honduras Jamaica México	Uruguai	Haiti	LESS THAT 50% OF NEEDS	Argentina Colômbia El Salvador	Jamaica México	Venezuela
		LOW	MODERATE	HIGH		LOW	MODERATE	HIGH
	PARTICIPATION				PARTICIPATION			

Table 11 - Association between financial sufficiency to meet targets and participation level
Source: Based on GLAAS (2017).

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6 | JOINT EVALUATION OF INSTITUTIONAL ASPECTS AND ACCESS DATA

The analysis of data on access to drinking water and sanitation services and political-institutional aspects related to these services are usually made separately. However, the country's institutional environment has a strong relationship with the way access to services occurs. Tables 12 and 13 aim to address this issue and bring up this discussion by integrating access data and institutional aspects of sectoral policies. Nevertheless, it is important to highlight that it is not possible to reveal causal relationships with this preliminary analysis.

Table 12 represents the association between access data to safely managed drinking water services in urban areas and different institutional aspects. In the group of countries with high access to these services (above 94%), all belonging to the South Cone, some issues stand out. The "coverage of operation and maintenance costs by tariffs" is the institutional aspect with the greatest convergence. All countries also reported having sufficiency of funding (more than 75%), except for Brazil, that is, in the class "between 50% and 75% of what is needed". On the other hand, "existence of plan" was the institutional aspect with the greatest dispersion: while Chile reported an "agreed and consistently used plan", Argentina and Brazil reported having "agreed but insufficiently implemented" plans and Uruguay had no plan at all. The "participation level", although somewhat convergent, is inversely related to the previous aspects: Argentina, Brazil and Uruguay have moderate participation, and in Chile participation is low.

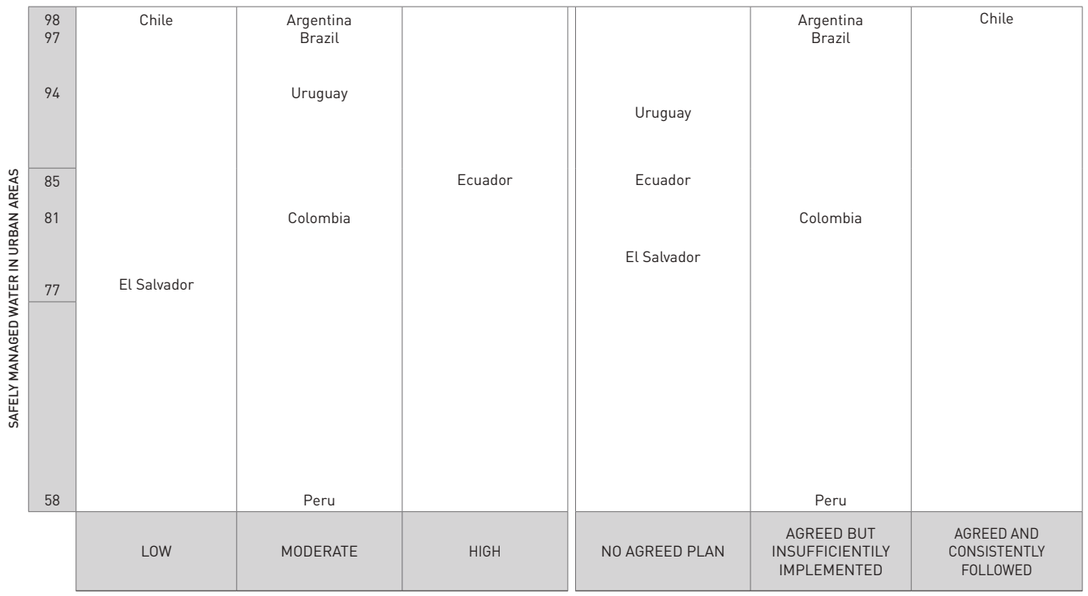
In the group of countries with intermediate levels of access to safely managed drinking water services (between 77% and 85%), formed by Colombia, El Salvador and Ecuador, there is little coherence in the association between access and institutional aspects. Ecuador had an opposite relation of institutional aspects in comparison with the first group, as it had high participation levels and a poor performance in all other aspects. Colombia, on the other hand, is similar to the first group, with an intermediate level in "participation" and "existence of plan" (although not sufficiently implemented) and a good performance in "sufficiency of funding" and "tariff". El Salvador underperformed in all institutional aspects. Finally, Peru, which had a 58% coverage, presented an intermediate performance in all institutional aspects.

These combinations of aspects regarding drinking water services in urban areas suggests a strong relationship between access and issues related to financial resources for the sector. The sufficiency of funding to meet targets and the coverage of costs by tariffs tend to yield sustainability to the system, but it is not possible to evaluate if countries have better access because they have applied more resources or have more resources because they have expanded coverage and hence the tax collection base. The low participation level and the intermediate level of planning in the countries with higher coverage also call attention. It could lead to mistaken and undemocratic decisions with the potential to affect the quality of services.

Table 13 represents the association between access to safely managed sanitation services in urban areas and institutional aspects. Chile had the best coverage (81%) among all countries represented, possibly due to financial aspects of the sector. Uruguay, which had the second highest coverage (65%), exhibited an intermediate participation level and low performance in all other aspects. In the intermediate group, where Mexico (44%), Colombia (41%) and Brazil (40%) are present, the latter two countries had a similar behavior, with an intermediate performance in "participation" and "existence of plan" and a satisfactory

performance in the coverage of operation and maintenance costs by tariffs. Mexico, on the other hand, is well positioned only in the "existence of plan" aspect. In the third group, formed by 7 countries, the positioning was random, with no visible patterns.

The association between access to services and institutional aspects was not consistent in sanitation services, making it difficult to infer clear findings at first glance. Although preliminary, the joint evaluation of access and institutional data shows potential for deepening the understanding of WASH policies and their impact on meeting the SDG targets.



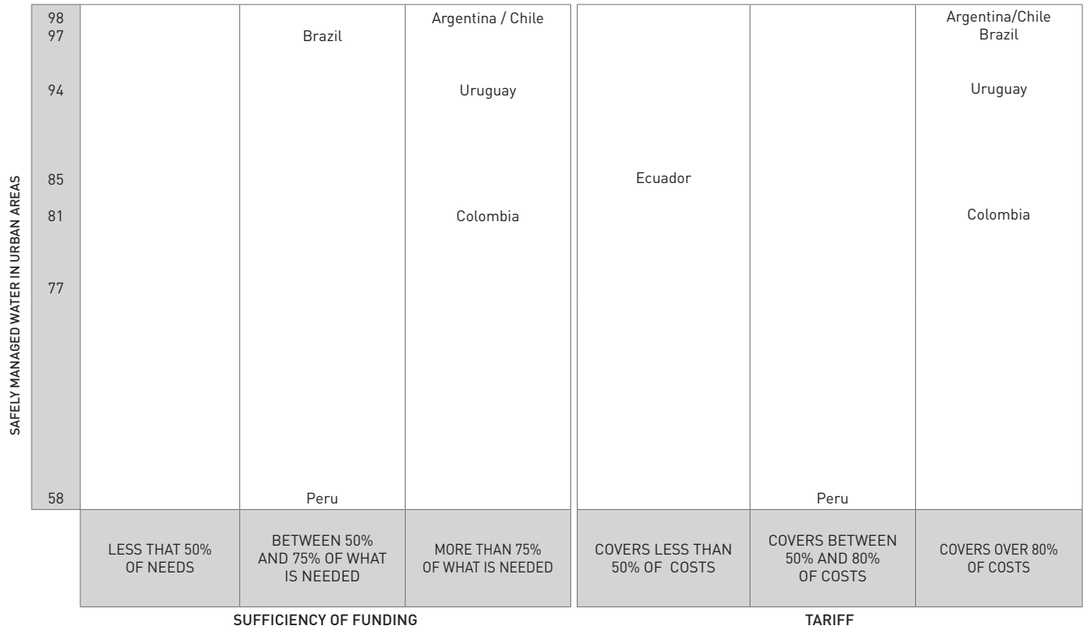


Table 12 - Association between access to safely managed drinking water services in urban areas and institutional aspects
Source: Based on JMP (2017) and GLAAS (2017)

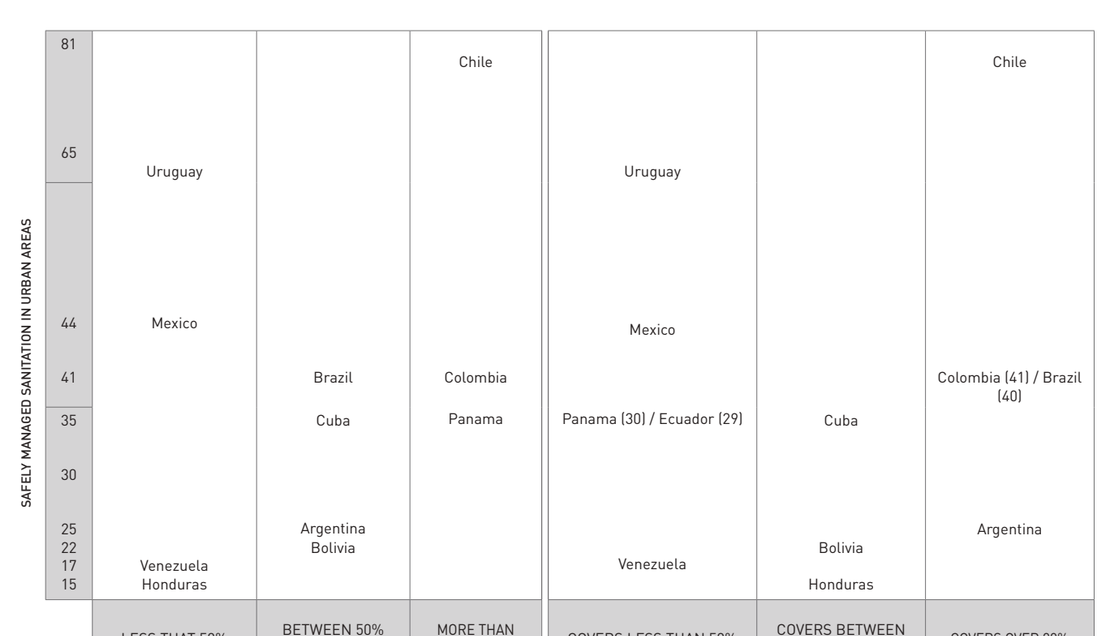
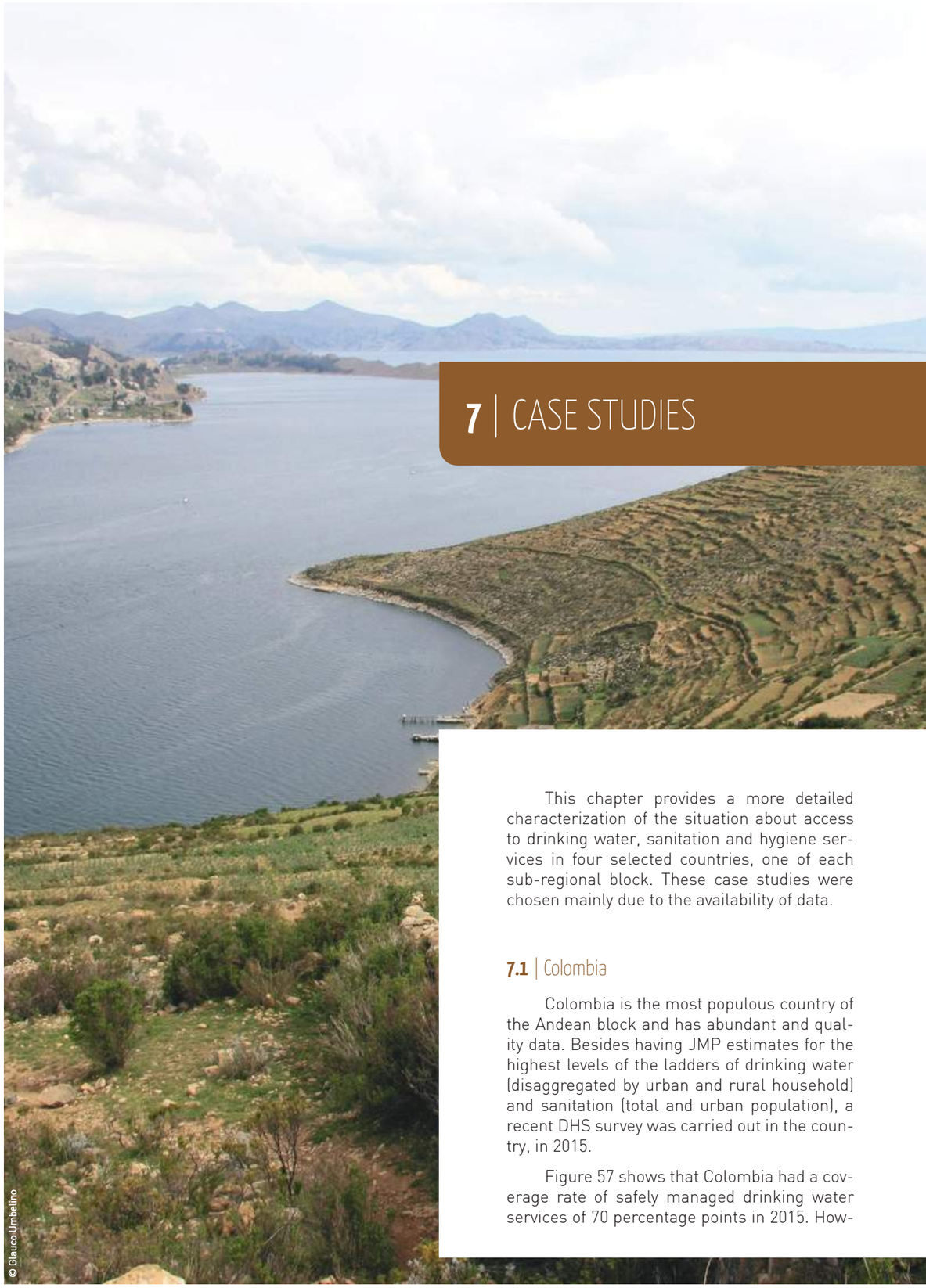


Table 13 - Association between access to safely managed sanitation services in urban areas and institutional aspects
Source: Based on JMP (2017) and GLAAS (2017).



7 | CASE STUDIES

This chapter provides a more detailed characterization of the situation about access to drinking water, sanitation and hygiene services in four selected countries, one of each sub-regional block. These case studies were chosen mainly due to the availability of data.

7.1 | Colombia

Colombia is the most populous country of the Andean block and has abundant and quality data. Besides having JMP estimates for the highest levels of the ladders of drinking water (disaggregated by urban and rural household) and sanitation (total and urban population), a recent DHS survey was carried out in the country, in 2015.

Figure 57 shows that Colombia had a coverage rate of safely managed drinking water services of 70 percentage points in 2015. How-

ever, disaggregated data shows that the proportion of the population with access to this level of services in urban areas was twice that of rural areas. In addition, 12% of the rural population did not have access to any type of drinking water facility, being obligated to use surface waters (rivers, dams, lakes, irrigation channels, etc.). Estimates also pointed a significant contrast in the access to improved water facilities: there was a 23-percentage point gap between urban and rural areas in 2015. Finally, considering the whole country, in this same year, 5% of the population did not have access to drinking water on premises and, among them, 41% spent more than 30 minutes to get to the water source and return [36].

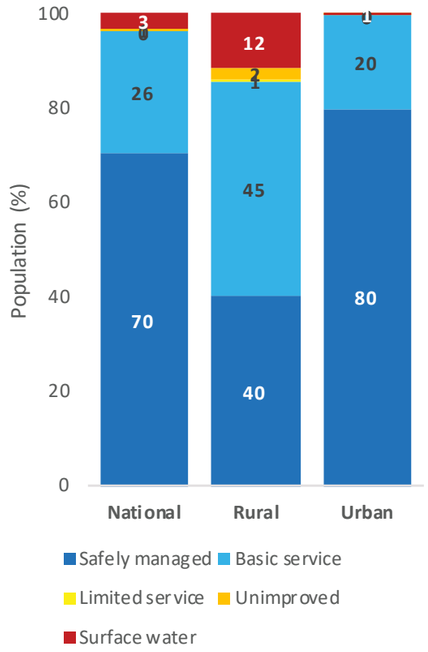


Figure 57 - Proportion of population using different levels of drinking water services in Colombia, 2015
Source: WHO/UNICEF/JMP (2017).

Figure 58 shows the spatial inequalities between the western and eastern regions of Colombia regarding the access to at least basic drinking water services. The lowest coverage was observed in the "Oriental" region (86%), followed by "Territorios Nacionales" (87). The highest coverages were observed in the "Pacífica" (93), "Central" (92) and "Atlantica" (89) regions.

36 DHS, 2015.

While the population of the "Bogota" region had nearly universal access to at least basic drinking water services, the population of the "Oriental" region – which surrounds "Bogota" - exhibited a proportion of access to this level of services 14 percentage points lower

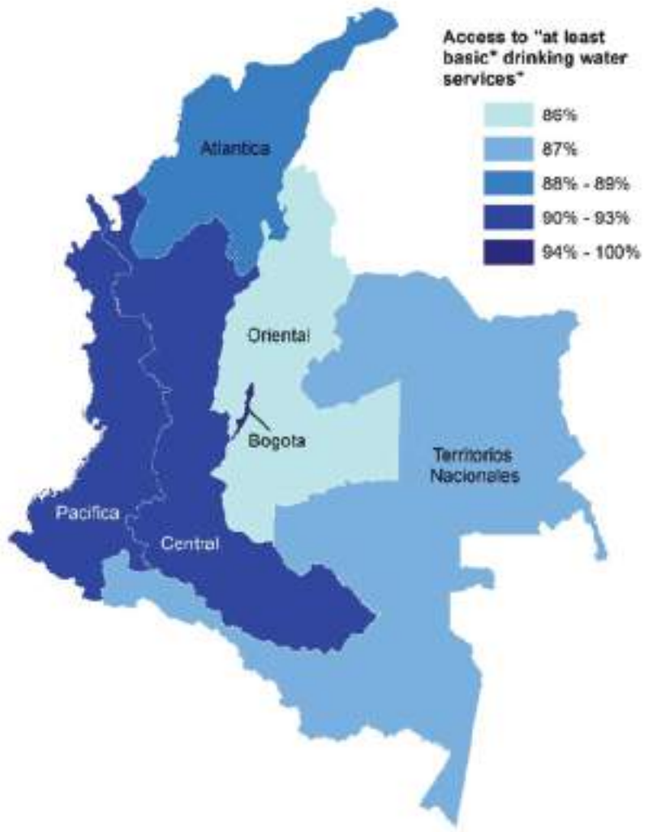


Figure 58 - Proportion of population using at least basic drinking water services by subnational regions - Colombia, 2015
Source: Based on WHO/UNICEF/JMP (2017).

Figure 59 shows that only 40% of the Colombian population had access to safely managed sanitation services and 4% did not have access to any type of sanitation facility. In rural areas, the situation was particularly serious: 12% of the population practiced open defecation and 8% had access only to unimproved facilities. While in urban areas the coverage of improved sanitation facilities reached 85%, in rural areas it was only 68% (WHO / UNICEF / JMP, 2017). Considering the whole country, of the people who had access to sanitation facilities (93%), 5% of them shared facilities with members of other households in 2015 [37].

37 DHS, 2015.

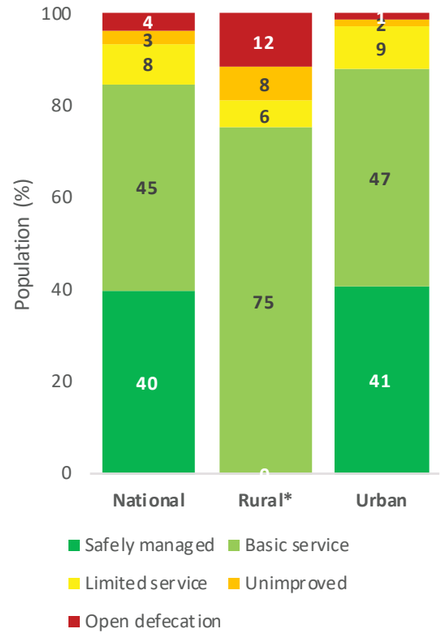
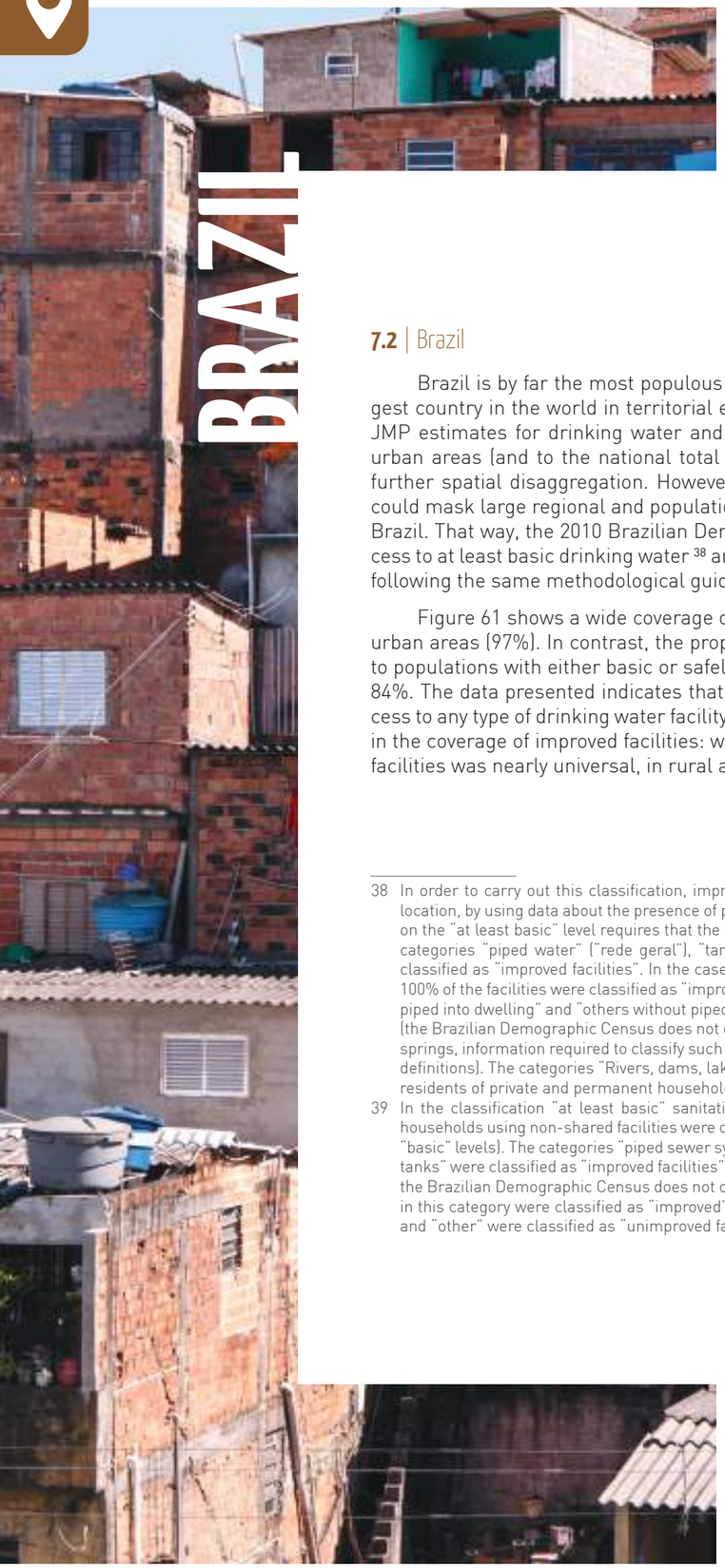


Figure 59 - Proportion of population using different levels of sanitation services in Colombia, 2015
Source: WHO/UNICEF/JMP (2017).
Note: No safely managed estimate available for rural areas.

Although the degree of inequality in coverage of at least basic sanitation services between Colombian regions has been the same as drinking water services (around 14 percentage points), Figure 60 shows a distinct spatial pattern. The lowest coverage was observed in the "Atlantica" region, in the north of the country (78%), followed closely by the "Territorios nacionales" (79) in the east, and by the "Pacifica" region (80), in the west. The highest proportions of access to at least basic sanitation services were those of the Central region and Bogota, around 90%.

While the "Bogota" and "Central" regions had a coverage of at least basic sanitation services around 90 percentage points in 2015, the "Atlantica" region, in the north of the country, exhibited a much lower proportion, of only 78 percentage points

Figure 60 - Proportion of population using at least basic sanitation services by subnational regions - Colombia, 2015
Source: Based on WHO/UNICEF/JMP (2017)



BRAZIL

7.2 | Brazil

Brazil is by far the most populous country of the South Cone and the fifth largest country in the world in territorial extension and population. Unfortunately, the JMP estimates for drinking water and sanitation services in Brazil are limited to urban areas (and to the national total in the case of sanitation) and do not allow further spatial disaggregation. However, simply using central tendency measures could mask large regional and population inequalities, a very well-known feature of Brazil. That way, the 2010 Brazilian Demographic Census was used to estimate access to at least basic drinking water [38] and sanitation[39] services in the scale of states, following the same methodological guidelines of the 2017 JMP report.

Figure 61 shows a wide coverage of safely managed drinking water services in urban areas (97%). In contrast, the proportion of access to basic services (referring to populations with either basic or safely managed services) in rural areas was only 84%. The data presented indicates that 8% of the rural population did not have access to any type of drinking water facility in 2015. Great differences are also observed in the coverage of improved facilities: while in urban areas the access to this type of facilities was nearly universal, in rural areas it was 87%.

38 In order to carry out this classification, improved water facilities were estimated considering their location, by using data about the presence of piped water in the household (because the classification on the "at least basic" level requires that the water collection time does not exceed 30 minutes). The categories "piped water" ("rede geral"), "tanker truck" and "rainwater", as defined by JMP, were classified as "improved facilities". In the case of the category "wells or springs piped into dwelling", 100% of the facilities were classified as "improved". In the case of the categories "wells or springs not piped into dwelling" and "others without piped water", 50% of the facilities were considered improved (the Brazilian Demographic Census does not distinguish between protected and unprotected wells or springs, information required to classify such facilities as improved or not improved according to JMP definitions). The categories "Rivers, dams, lakes and streams" were classified as "no facilities". Only residents of private and permanent households were considered.

39 In the classification "at least basic" sanitation services, only residents of private and permanent households using non-shared facilities were considered (this criterion distinguishes the "limited" and "basic" levels). The categories "piped sewer system" ("rede coletora de esgoto ou pluvial") and "septic tanks" were classified as "improved facilities". In the case of "pit latrines" ("fossas rudimentares"), as the Brazilian Demographic Census does not consider if they are covered or open, 50% of the facilities in this category were classified as "improved". The categories "open pit" ("vala"), "river, lake or sea" and "other" were classified as "unimproved facilities" or "no facilities".

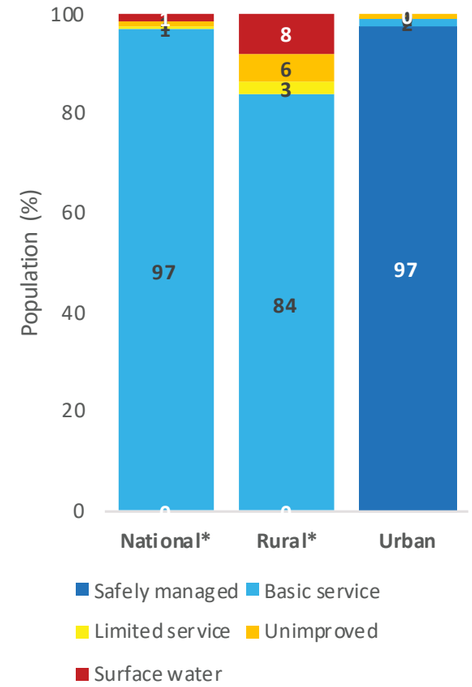


Figure 61 - Proportion of population using different levels of drinking water services in Brazil, 2015
Source: WHO/UNICEF/JMP (2017)
Note: No safely managed estimate available for rural areas.

Figure 62 shows a great regional heterogeneity in the coverage of at least basic drinking water services in Brazil. In general, the South and Southeast regions presented a higher proportion of access to this level of services than the rest of the country, a coverage particularly higher than the North and Northeast regions.

While the southern Brazilian states had nearly universal coverage of at least basic drinking water services in 2010, in the North region, the states of Acre, Amazonas and Pará exhibited levels of access around 80%, the lowest in the country

Figure 62 - Proportion of population using at least basic drinking water services by subnational regions - Brazil, 2010
Source: Based on Demographic Census microdata (Brazil, 2010).

Figure 63 shows that the access to safely managed sanitation services by the Brazilian population was less than 40% by 2015. In rural areas, 11% of the population did not have any type of sanitation facility and 30% had access only to unimproved services. In urban areas, this proportion was more than three times lower. The contrast between urban and rural areas was also reflected in the type of facilities used: while in rural areas access to improved facilities was only 52%, in urban areas, this proportion reached 88%.

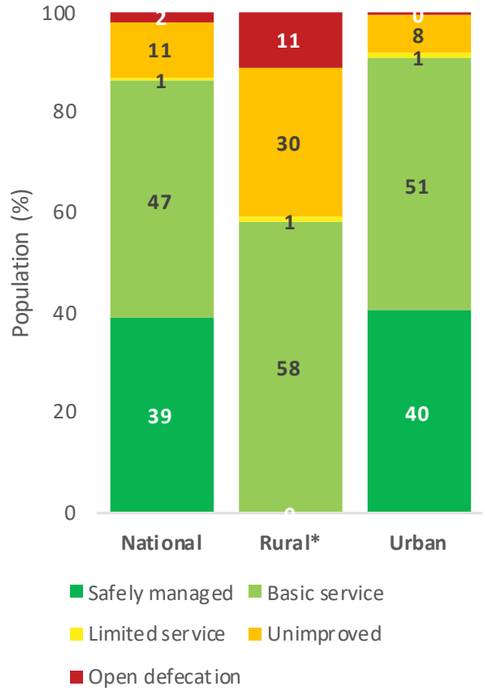
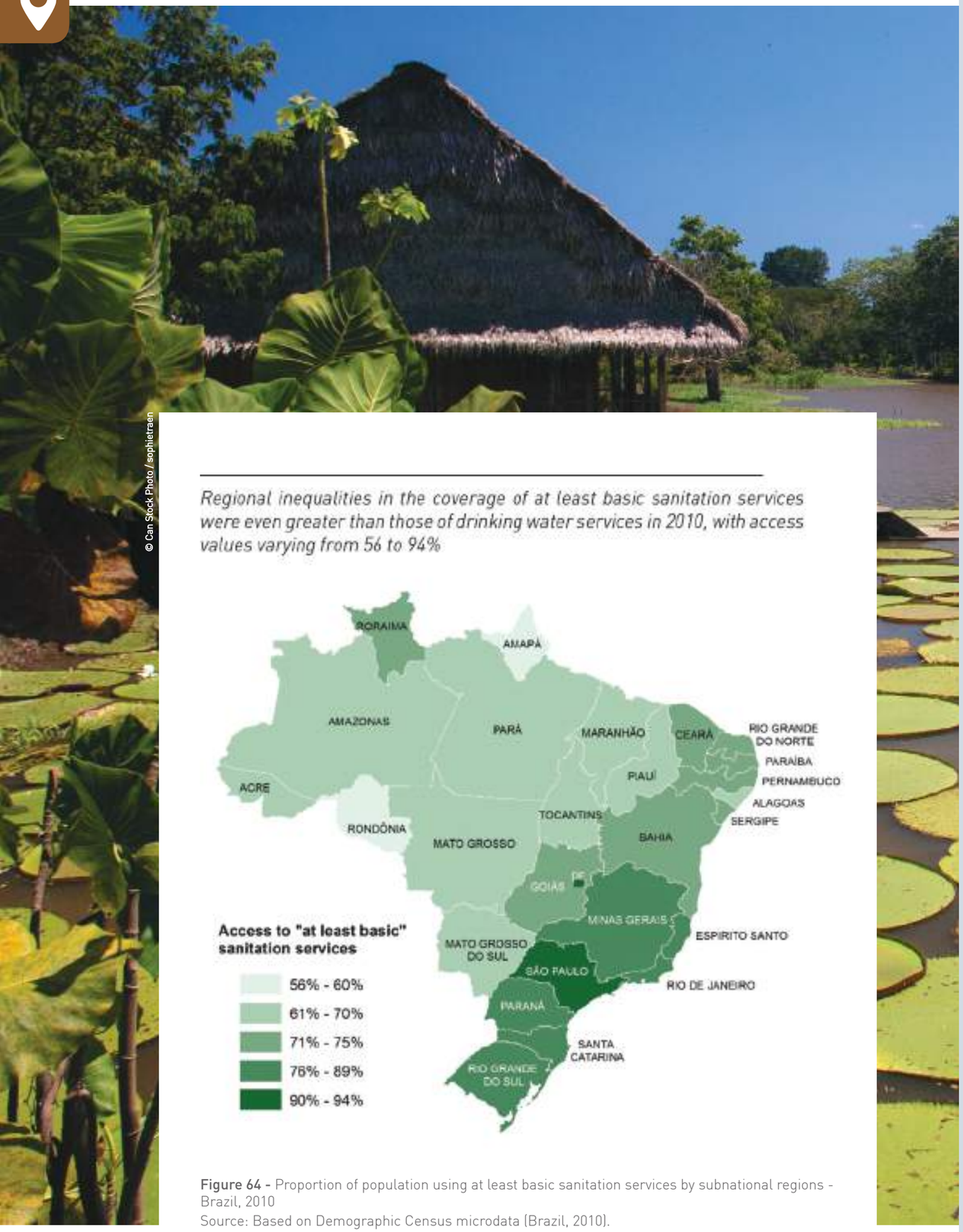


Figure 63 - Proportion of population using different levels of sanitation services in Brazil, 2015
Source: WHO/UNICEF/JMP (2017)
Note: No safely managed estimate available for rural areas.

Figure 64 shows that the regional inequalities in the access to at least basic sanitation services in 2010 were even higher than the corresponding level of drinking water services: its coverage varied from 56 to 94% (respectively, in Amapá and Federal District). As in the case of drinking water services, the highest coverages were those of the Southeast and South regions, which also showed great intraregional inequalities. The gap between the state of Paraná (82) and the adjacent state of São Paulo (93), for example, exceeded ten percentage points.



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Regional inequalities in the coverage of at least basic sanitation services were even greater than those of drinking water services in 2010, with access values varying from 56 to 94%

Figure 64 - Proportion of population using at least basic sanitation services by subnational regions - Brazil, 2010
Source: Based on Demographic Census microdata (Brazil, 2010).

MEXICO

7.3 | Mexico

Mexico is the most populous country of the North and Central America block and has great ethnic diversity. It has coverage estimates of safely managed drinking water services (although not disaggregated by rural-urban status), estimates of safely managed sanitation services (total and urban populations) and estimates for basic hygiene services (disaggregated by rural-urban status). In addition, a recent edition of MICS was carried out in Mexico in 2015, which made it possible to estimate the coverage of at least basic drinking water services[40], at least basic sanitation services[41] and basic hygiene services[42] at the regional level (although not disaggregated according to the 31 Mexican states).

JMP estimates indicate that 63% of the national population had safely managed drinking water services and 97% had at least basic services by 2015 (Figure 65). In urban areas, this proportion reached 99%, 8 percentage points above the proportion corresponding to rural areas. This contrast was also observed in the access to improved drinking water facilities: while the coverage in urban areas reached 97%, in rural areas, this proportion was 92%. It is noteworthy that, in rural areas, 4% of the population did not have any type of water facility, and 4% had access only to unimproved facilities.

40 In the estimation of the access to "at least basic" drinking water services, only residents of households with a drinking water source on premises or that spend up to 30 minutes to get water and come back were considered, as defined by JMP. In regard to facilities classification, the following categories were considered "improved": "piped water into dwelling", "piped water to yard/plot", "neighbor piped water" ("Tubería del vecino"), " Public tap" ("Llave/grifo público"), "standpipe" ("Pozo con tubería"), "protected well", "protected spring", "rainwater", "tanker truck" ("Carro-tanque / camión" and "Carreta con tanque / tambor pequeno"), "covered cistern/tank" and "bottled water." The categories "unprotected well", "unprotected spring", "surface water (river, stream, dam, lake, pond, canal, irrigation channel)" and "other" were classified as "unimproved" or "no facilities."

41 In the estimation of the access to "at least basic" sanitation services, only residents of households with non-shared facilities were considered (this criterion distinguishes the "limited" and "basic" levels). In regard to facilities classification, the following categories were considered "improved": Flush/toilets connected to "piped sewer systems", "septic tanks", "pits" ("Letrina (pozo negro, hoyo)" and "Latrine (black well, pit)"), "to elsewhere", "to unknown place/not sure/DK", to "ventilated improved pit latrines" ("letrina de fosa mejorada con ventilación") and "composting toilet" ("excusado de compostaje"). The categories "pit latrine without slab / open pit", "hanging toilet, hanging latrine" and "other" were classified as "unimproved" facilities.

42 In the estimation of the access to "basic" hygiene services, the exact same criteria proposed by the JMP was used (data available on the MICS survey).

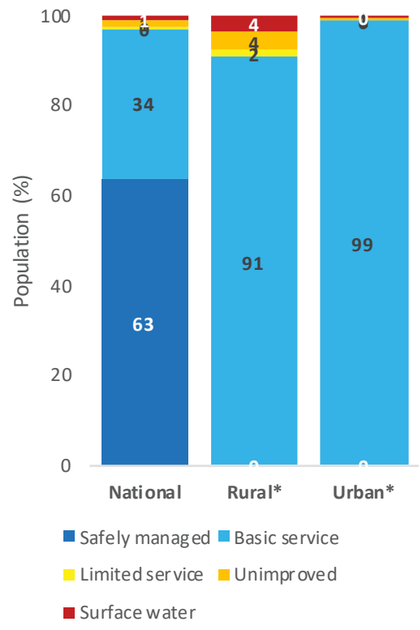

Figure 65 - Proportion of population using different levels of drinking water services in Mexico, 2015
Source: WHO/UNICEF/JMP (2017)
Note: No safely managed estimates disaggregated for rural and urban areas.

Figure 66 shows that, although regional inequalities were not so strong in Mexico as they were in Brazil (at least at this level of spatial disaggregation), the more western and northern regions had a higher coverage of at least basic drinking water services than the more eastern and southern regions of the country. While the "Noroeste" region exhibited a nearly universal level of access, in the "Sur" region, the access was 4 percentage points lower, at 96%.

In Mexico, the coverage of at least basic drinking water services tends to decline from the northwest to the southeast. In 2015, the "Noroeste" region presented the highest level of access to services of this level, and the "Sur" region, the lowest

Figure 66 - Proportion of population using at least basic drinking water services by subnational regions - Mexico, 2015
Source: Based on MICS5 microdata (Mexico, 2015).

Figure 67 shows that 46% of the Mexican population had access to safely managed sanitation services and 41% to basic services. Although there are no safely managed estimates available for rural areas, there is a significant difference between these and urban areas at the lower levels of services. While in urban areas only 1% of the population did not have access to any type of sanitation services, this proportion reached 6% in rural areas; while in urban areas, 2% of the population had access only to unimproved services, in rural areas this proportion was four times higher, reaching 8%. Finally, in urban areas, 88% of the population had access to improved sanitation facilities; in rural areas, only 75%.

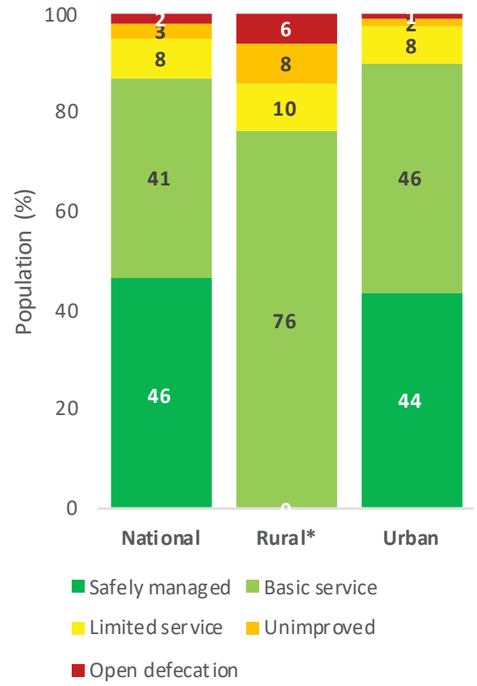

Figure 67 - Proportion of population using different levels of sanitation services in Mexico, 2015
Source: WHO/UNICEF/JMP (2017)
Note: No safely managed estimate available for rural areas.

Figure 68 shows the proportion of the population with access to at least basic sanitation services by subnational regions. The spatial pattern was basically the same as the corresponding level of drinking water services: there is a clear downward trend in coverage from the northwest to the southeast. Once again, the highest coverage was in the "Noroeste" region and the lowest, in the "Sur" region. In both cases, the regions corresponding to the "Estado/Ciudad de Mexico" had lower levels of access than the "Centro" region, in which it is inserted.

The coverage of at least basic drinking water and sanitation services was lower in the regions corresponding to the "Estado/Ciudad de Mexico" than the "Centro" region, in which it is inserted.

Figure 68 - Proportion of population using at least basic sanitation services by subnational regions - Mexico, 2015
Source: Based on MICS5 microdata (Mexico, 2015).

Figure 69 shows that the proportion of the Mexican population without access to hygiene services in urban and rural areas was the same, but in urban areas the proportion of people who had access to the basic level - the highest of the hygiene ladder – was higher. In addition, the proportion of people who had only limited services in rural areas was twice the number of urban areas. MICS data from 2015 suggest a more positive situation: according to this survey, 97% of the Mexican population had access to handwashing facilities with available water and, in 94% of the cases, with soap or detergent (MICS 2015).

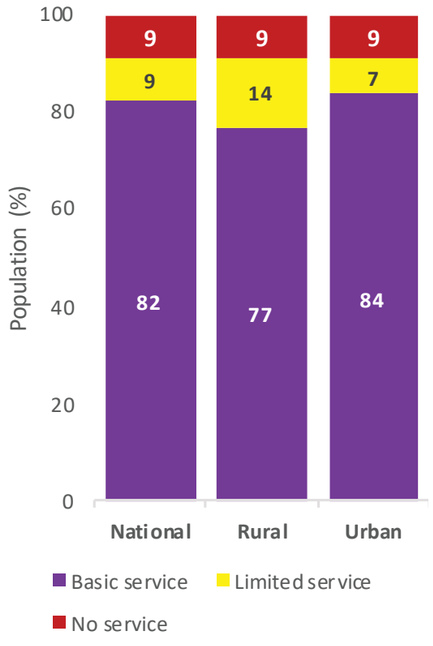

Figure 69 - Proportion of population using different levels of hygiene services in Mexico, 2015
Source: WHO/UNICEF/JMP (2017)

Figure 70 shows that the spatial pattern regarding the use of basic handwashing facilities is different from that observed in relation to drinking water and sanitation services. The "Noroeste" region had the highest coverage and the "Sur" region, the lowest. In this case, the region corresponding to the "Estado/Ciudad de Mexico" had a higher coverage than that of the "Centro" region, in which it is inserted.

The northern part of Mexico had the highest coverage of basic hygiene services in 2015, above 92%"

Figure 70 - Proportion of population using basic handwashing facilities by subnational regions - Mexico, 2015
Source: Based on MICS5 microdata (Mexico, 2015).

DOMINICAN REPUBLIC

7.4 | Dominican Republic

Choosing a representative country of the Caribbean is particularly challenging because of its great ethnic and linguistic diversity and the scarcity of data available for the region. The Dominican Republic was chosen as a case study due to the availability of data, even if only for the "at least basic" level of drinking water and sanitation services (disaggregated by rural-urban status). In regard to hygiene, there is information available on all levels of the correspondent JMP service ladder. Finally, a relatively recent edition of the MICS survey was carried out in the Dominican Republic, in 2014.

Figure 71 shows that 94% of the population had access to at least basic drinking water services in 2015. However, the gap between rural and urban areas was larger than 10 percentage points. In rural areas, 5% of the population did not have access to any type of drinking water services in 2015, while in urban areas, this proportion was null. In addition, the use of more precarious - unimproved or limited - services was three times higher in rural areas (9%) than in urban areas (3%). Data indicates a lower degree of inequality in the access to improved facilities: in urban areas, coverage was 85% and, in rural areas, 82 (WHO / UNICEF / JMP, 2017). Finally, the MICS survey conducted in the Dominican Republic in 2014 indicated that 7% of the country's population had no drinking water on premises and, of this group, 11% spent more than 30 minutes to get water and return.

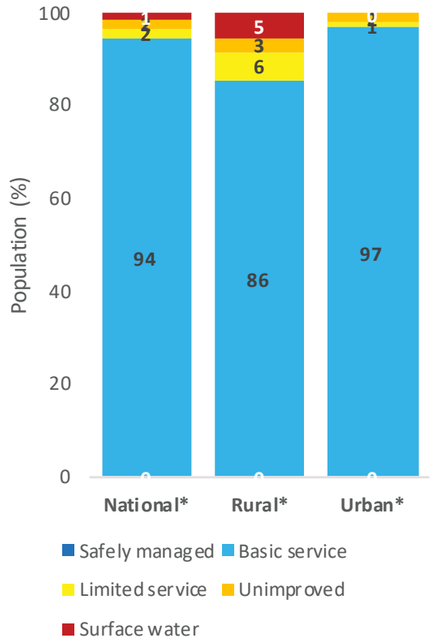

Figure 71 - Proportion of population using different levels of drinking water services in the Dominican Republic, 2015
Source: WHO/UNICEF/JMP (2017)
Note: No safely managed estimate available

Figure 72 shows that, in general, the north of the Dominican Republic had superior coverage of at least basic drinking water services in comparison with the rest of the country. The exception was the "Ozama/Metropolitana" region, in the south, whose population had the highest proportion of access to services of this level and was surrounded by regions with lower levels of access. The "El Valle" region had the lowest coverage (93%). It is worth noting that the contrast between the Dominican Republic regions was not as marked as the contrast between their urban and rural areas (considering all regions of the country).

The "Ozama/Metropolitana" region had the highest coverage of at least basic drinking water services among all regions of the Dominican Republic

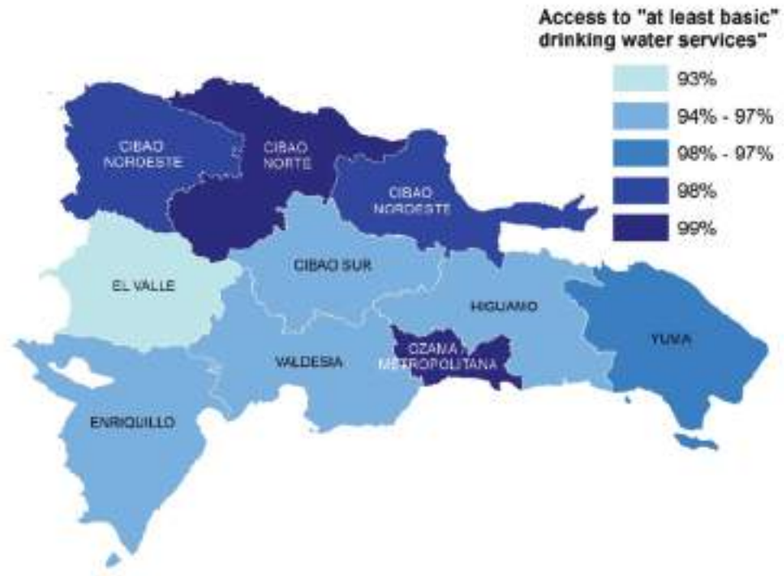

Figure 72 - Proportion of population using at least basic drinking water services by subnational regions – Dominican Republic, 2015
Source: Based on WHO/UNICEF/JMP (2017)

Figure 73 shows that the coverage of at least basic sanitation services in the Dominican Republic was 83% in 2015. Like in the case of drinking water services, significant differences between urban and rural areas were identified, starting with an 11-percentage point gap in the coverage of at least basic services. In addition, the proportion of people without access to any type of sanitation service was four times higher in rural than urban areas and access to unimproved services, twice as high. While in urban areas the coverage of improved sanitation facilities was 86%, in rural areas it was 76%. Finally, data from the MICS survey conducted in 2014 indicated that 2% of the population did not have access to sanitation facilities, and 13% shared facilities with members of other households (MICS 2014).

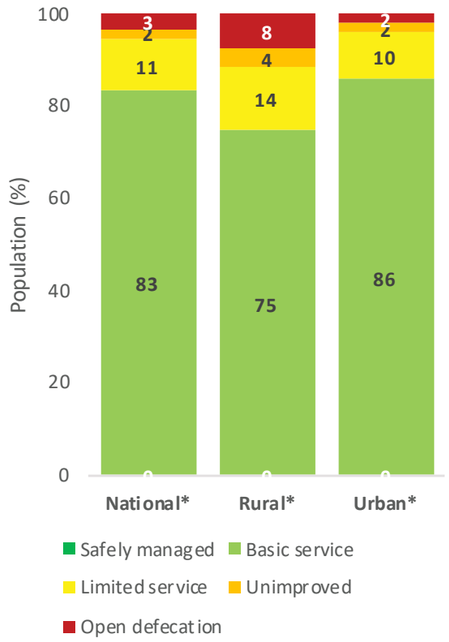

Figure 73 - Proportion of population using different levels of sanitation services in the Dominican Republic, 2015
Source: WHO/UNICEF/JMP (2017)
Note: No safely managed estimate available.

The map of Figure 74 shows a much stronger contrast in the access to sanitation services than that observed in the drinking water services map. The "Enriquillo" region had the lowest level of access to at least basic sanitation services (70%), followed by "Yuma" (72) and "Higuamo" (78). The highest coverage was in the "Cibao Norte" region (89), followed by "Cibao Sur" and "Ozama/Metropolitana", both around 86%.

Regional inequalities in the coverage of at least basic sanitation services were more pronounced than in drinking water services, with access levels ranging from 70 to 89% (respectively, in the regions of "Enriquillo" and "Ozama / Metropolitana")

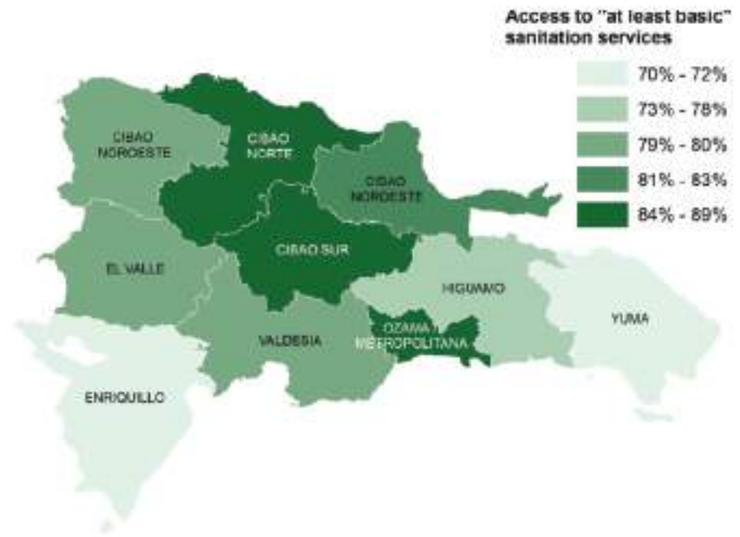

Figure 74 - Proportion of population using at least basic sanitation services by subnational regions – Dominican Republic, 2015
Source: Based on WHO/UNICEF/JMP (2017)

Figure 75 shows that only 55% of the Dominican Republic population had access to basic hygiene facilities in 2015. There was a great contrast between urban and rural areas, with a 16-percentage point gap between them. Although the proportion of access to limited services was the same, the proportion of people without access to handwashing facilities in urban areas was 26% while in rural areas it reached 42%.

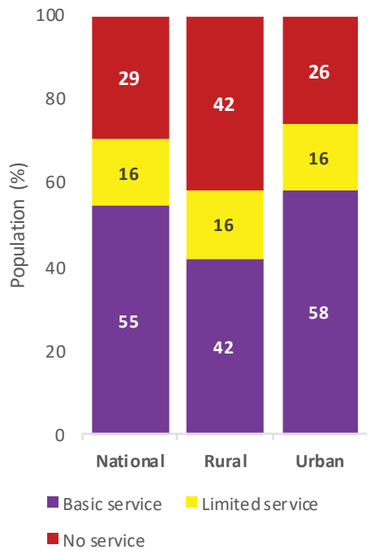

Figure 75 - Proportion of population using different levels of hygiene services in the Dominican Republic, 2015
Source: WHO/UNICEF/JMP (2017)

The map in Figure 76 also shows a significant regional heterogeneity in what concerns hygiene services. The "Cibao Sur" region had the highest level of access to basic hygiene services (68%), followed by "Cibao Nordeste" (64) and "Ozama/Metropolitana" (64). The "El Valle" and "Enriquillo" regions, both located in the most western part of the country had the lowest coverage of basic services, respectively 34% and 36%.

""El Valle" and "Enriquillo", both located in the most western part of the Dominican Republic, had the lowest coverage of basic hygiene services among all regions of the country in 2015

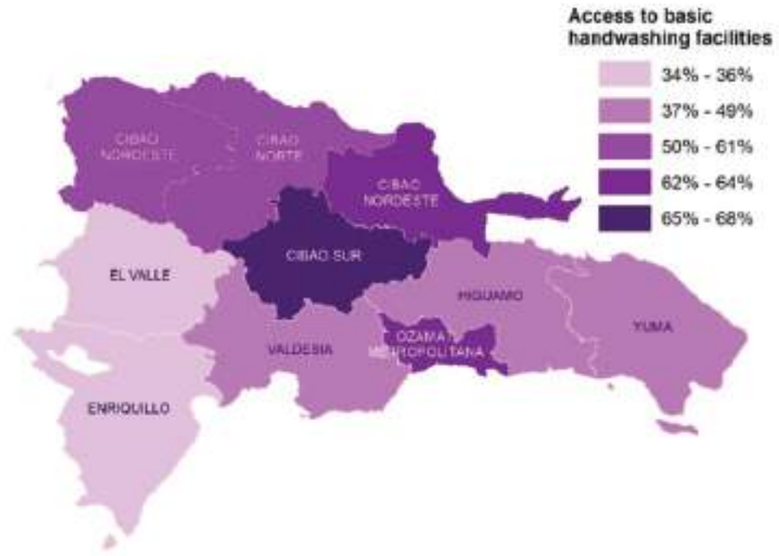

Figure 76 - Proportion of population using basic handwashing facilities by subnational regions – Dominican Republic, 2015
Source: Based on WHO/UNICEF/JMP (2017)

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8 | CONCLUSIONS AND RECOMMENDATIONS

This report aimed to contribute to the evaluation and monitoring of the stage of compliance with the UN Sustainable Development Goals related to drinking water, sanitation and hygiene (SDG 6.1 and 6.2) in Latin America and the Caribbean, based on an analytical framework of human rights. The conditions of access to WASH services and facilities in the countries of this region were examined and comparisons between them were made, as well as between population subgroups and regions at the subnational level. The report attempted to emphasize the most neglected dimensions of human rights in the efforts to monitor the SDGs, namely inequality and affordability.

First, in an overview of the access to WASH services in Latin American and Caribbean countries and sub-regional blocks, Haiti stood out with levels of access to the three types of services considerably lower than the other countries of the region. In contrast, Chile was the only country in Latin America and the Caribbean with nearly universal access to at least basic drinking water and sanitation services. Considering the sub-regional blocks, the highest coverage of services was observed in the South Cone, and the lowest, in the Caribbean.

One of the major challenges in the evaluation and monitoring of access levels is the lack or deficiency of information on the variables that make up the concepts of "safely managed" drinking water and sanitation services and "basic" hygiene services. The greatest limitation regarding drinking water services is the lack of data on availability (needed to assess the "water available when necessary" criterion) and water quality (necessary to evaluate the criterion "water free from faecal and priority chemical contamination"). In the case of sanitation services, the biggest challenge is to obtain data related to disposal, transport and treatment of excreta. Although the last editions of the MICS and DHS surveys address the topic of hygiene, there are still few countries with enough data to classify services at the basic level of the corresponding ladder.

Great intranational inequalities were observed in the access to WASH services and facilities between population subgroups under conditions of greater vulnerability and the rest of the population. Significant differences were observed between residents of urban and rural areas, people of different educational and economic levels, indigenous and non-indigenous, white and non-white and even between sexes. In relation to facilities, the highest inequality levels were observed in the access to sewage systems or septic tanks, followed by the access to piped water; the lowest inequality level was in the access to toilets, which tends to have a broader coverage. The adjustment of access levels using the "inequality factor" showed that the most unequal countries in Latin America and the Caribbean in terms of water and sanitation facilities and services were Bolivia, in the Andean Block; Paraguay, among the countries of the South Cone; Nicaragua, among the countries of North and Central America; Haiti[43], in the Caribbean.

A high-income impairment with drinking water and sanitation services was identified in different

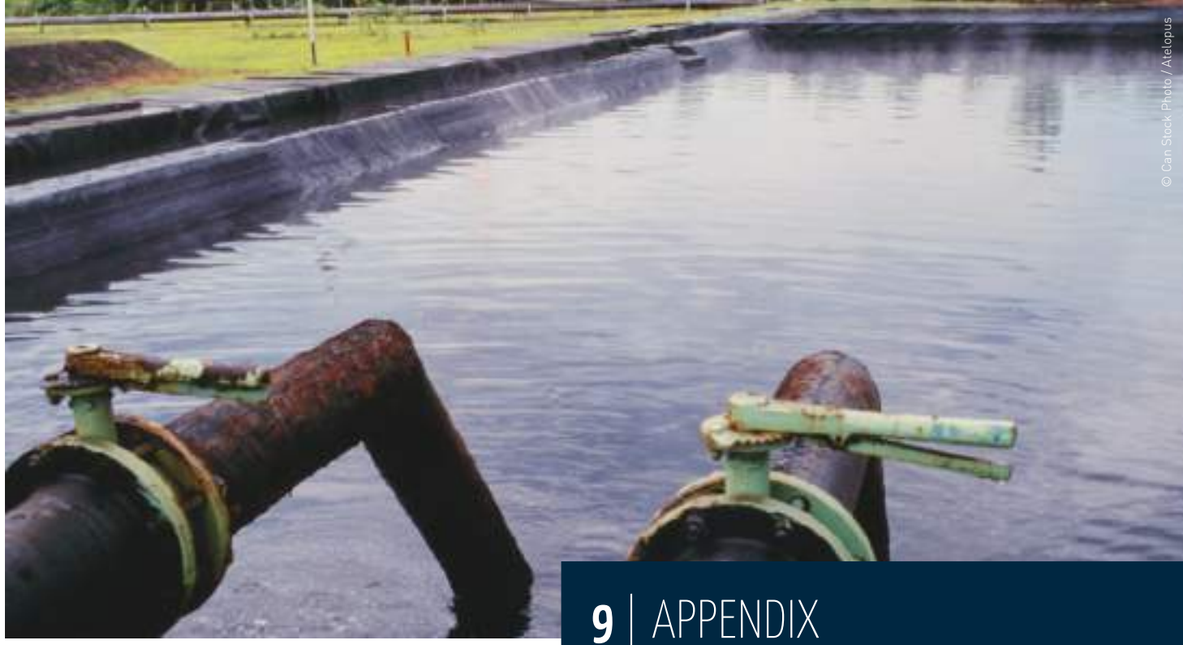
43 Due to insufficient data, inequalities in access to sanitation facilities in Haiti could not be considered.

countries, especially Brazil and Colombia, although the application of social tariffs was not taken into account. Even considering the affordability conditions only in the capitals of the countries, the application of some methodological innovations - such as the standardization of the consumption level and the focus on the poorest segments of the population – showed that affordability is a relevant problem in the region.

The analysis of the operational conditions of the water and sanitation sectors, especially regarding staff, regulation and financing, showed that even countries with financial sufficiency to meet targets had no specific measures to reach the most vulnerable groups. This could deepen the inequalities in access to water and sanitation services and hinder the compliance with human rights. The joint evaluation of institutional and access data indicated that countries with high access to safely managed drinking water and sanitation services have a better consideration of institutional and financial aspects, such as coverage of operation and maintenance costs by tariffs and sufficiency of resources to meet targets.

The following recommendations are presented in view of the gaps and efforts made in this report, especially regarding evaluation and monitoring methodologies:

- The focus of this report was mainly on the residential access to services and facilities, despite a brief discussion on access to WASH in schools. However, the access to these services goes beyond households, schools or health care facilities (which will be addressed in one of the next JMP publications). From the human rights perspective, it is important to **develop studies on the access to WASH services and facilities in public spaces (streets, parks, squares, transport stations), prisons, workplaces, orphanages, institutions for the disabled and the elderly, among other places where people live or spend much of their lifetimes;**
- Recent versions of MICS and DHS surveys are available only for a few countries. Thus, **it is necessary to increase the frequency of *surveys***, such as those mentioned, **in order to cover a growing number of countries and update the information base. This will allow better analysis, especially of disaggregated data, and the generation of a more consistent historical data series for monitoring the SDGs;**
- The quality and availability of data on rural areas, regarding both access and institutional aspects, are well below those available for urban areas. Therefore, **countries must urgently begin to collect information for rural areas in a systematic way;**
- **It is essential that the information required to calculate the access to safely managed drinking water and sanitation services and basic hygiene services is collected in accordance with the new criteria proposed by JMP, in order to enable effective monitoring of SDGs 6.1 and 6.2;**
- It is necessary to deepen the monitoring of inequalities patterns in the access to WASH services in the region, including the definition and standardization of inequality dimensions of greater interest that better reflect the compliance with the human right to water and sanitation. It would be desirable the **formation of a regional working group to discuss, evaluate and propose new ways of monitoring inequalities in access to services, allowing better comparability between countries and sub-regional blocks;**
- There are many challenges and gaps in monitoring affordability, concerning conceptualization and characterization as well as data generation. There is an expert group associated with the WHO and UNICEF - *"Task Force on monitoring Inequalities for the 2030 Sustainable Development Agenda"* - working on this topic and elaborating methodological proposals to address it. **Monitoring the work of this group is highly recommended, so that countries, in addition to paying more attention to the topic, can contribute to the generation and provision of data in a more structured way and take advantage of eventual methodological advances;**
- Although this report had not addressed targets 6.a and 6.b, **attention must be paid to their monitoring and to the integrated monitoring of targets 6.1 and 6.2 alongside the other SDG 6 targets;**
- **It is recommended that regulators start playing a more active role in monitoring targets, especially regarding the compliance with the Human Rights to Safe Drinking Water and Sanitation;**
- **It is suggested that countries apply the TrackFin methodology developed by WHO** in order to improve the evaluation of economic flows in the sector, emphasize the affordability dimension and allow comparability between countries and sub-regional blocks;
- **Deepening of the joint evaluation of access data (JMP) and institutional aspects (GLAAS) is recommended** to establish methodologies that allow more effective evaluations of the influence of WASH public policies on the achievement of SDG targets.



9 | APPENDIX

The tables in this appendix contain the complete data used throughout this report and are presented in the order in which they appear in the text. They include additional information and, when possible, values are presented without rounding. They were prepared from various sources, duly referred to in the tables.

PROPORTION OF NATIONAL POPULATION USING AT LEAST BASIC DRINKING WATER AND SANITATION SERVICES AND BASIC HYGIENE FACILITIES, 2015

COUNTRY	DRINKING WATER	SANITATION	HYGIENE
ARGENTINA	100.00	95.00	
BAHAMAS	98.00	92.00	
BARBADOS	98.00	96.00	88.47
BELIZE	97.00	87.00	87.01
BOLIVIA	93.00	53.00	
BRAZIL	97.00	86.00	
CAYMAN ISLANDS		96.00	
CHILE	100.00	100.00	
COLOMBIA	97.00	84.00	
COSTA RICA	100.00	97.00	83.84
CUBA	95.00	91.00	85.21
DOMINICAN REPUBLIC	94.00	83.00	54.97
ECUADOR	93.00	86.00	85.16
EL SALVADOR	93.00	91.00	90.37
FRENCH GUYANA	93.00	90.00	
GUATEMALA	94.00	67.00	76.78
GUYANA	95.00	86.00	77.09
HAITI	64.00	31.00	25.52

COUNTRY	DRINKING WATER	SANITATION	HYGIENE
HONDURAS	92.00	80.00	84.09
JAMAICA	93.00	85.00	66.42
MEXICO	98.00	89.00	87.78
NICARAGUA	82.00	76.00	
PANAMA	95.00	77.00	
PARAGUAY	99.00	91.00	
PERU	90.00	76.00	
PUERTO RICO	97.00	97.00	
SAINT LUCIA	98.00	91.00	87.20
SURINAME	95.00	79.00	
TRINIDAD AND TO-BAGO	97.00	92.00	
URUGUAY	99.00	96.00	
VENEZUELA	97.00	95.00	

Source: WHO/UNICEF/JMP (2017)

PROPORTION OF POPULATION USING SAFELY MANAGED DRINKING WATER SERVICES,2015

COUNTRY	NATIONAL	RURAL	URBAN
ARGENTINA	99.00	-	98.00
BRAZIL	-	-	97.00
CHILE	98.00	-	98.00
COLOMBIA	71.00	40.00	81.00
COSTA RICA	90.00	-	-
ECUADOR	74.00	56.00	85.00
EL SALVADOR	-	-	77.00
GUATEMALA	61.00	-	-
MEXICO	43.00	-	-
NICARAGUA	59.00	30.00	79.00
PERU	50.00	20.00	58.00
URUGUAY	-	-	94.00
LATIN AMERICA AND THE CARIBBEAN	65.00	-	77.00
WORLD	71.00	55.00	85.00

Source: WHO/UNICEF/JMP (2017)

PROPORTION OF POPULATION USING SAFELY MANAGED SANITATION SERVICES, 2015

	NATIONAL	RURAL	URBAN
ARGENTINA	26.00	-	25.00
BOLIVIA	19.00	-	22.00
BRAZIL	39.00	-	40.00
CHILE	85.00	-	81.00
COLOMBIA	20.00	-	16.00
CUBA	31.00	-	28.00
ECUADOR	42.00	57.00	34.00
FRENCH GUYANA	58.00	-	-
HONDURAS	-	-	15.00
MEXICO	45.00	-	46.00
PANAMA	-	-	29.00
PERU	30.00	-	35.00
PUERTO RICO	32.00	-	-
URUGUAY	64.00	-	64.00
VENEZUELA	19.00	-	17.00
LATIN AMERICA AND THE CARIBBEAN	22.00	-	27.00
WORLD	39.00	35.00	43.00

Source: WHO/UNICEF/JMP (2017)

PROPORTION OF POPULATION WITHOUT WATER ON PREMISES (%) AND TIME IN MINUTES TO GET TO WATER SOURCE AND COME BACK

COUNTRY AND SURVEY	> 30 MIN	30 MIN OR LESS	PROPORTION OF POPULATION WITHOUT WATER ON PREMISES
HAITI (DHS6 2012)	51.49	48.51	91.44
NICARAGUA (DHS4 2001)	28.66	71.34	27.67
PERU (DHS6 2012)	27.63	72.37	19.53
EL SALVADOR (MICS5 2014)	29.33	70.67	14.00
HONDURAS (DHS6 2012)	24.19	75.81	13.75
BOLIVIA (DHS5 2008)	29.70	70.30	13.00
GUATEMALA (DHS7 2014-2015)	37.44	62.56	11.37
JAMAICA (MICS4 2011)	16.08	83.92	11.17
VENEZUELA (MICS2 2000)	10.68	89.32	9.02
DOMINICAN REPUBLIC (MICS5 2014)	11.43	88.57	7.25
CUBA (MICS5 2014)	10.27	89.73	7.07
GUYANA (MICS5 2014)	6.77	93.23	6.67
COLOMBIA (DHS7 2015)	40.79	59.21	5.14
PANAMA (MICS5 2013)	10.14	89.86	4.32
BELIZE (MICS5 2015-2016)	7.82	92.18	4.08
PARAGUAY (MICS5 2016)	10.89	89.11	3.11
MEXICO (MICS5 2015)	15.76	84.24	2.86
TRINIDAD AND TOBAGO (MICS4 2011)	11.61	88.39	1.87
URUGUAY (MICS4 2012-2013)	4.05	95.95	1.07
COSTA RICA (MICS4 2011)	6.67	93.33	0.44

Source: DHS and MICS.

PROPORTION OF POPULATION WITH ACCESS TO SHARED OR EXCLUSIVE TOILET FACILITY (%)

COUNTRY AND SURVEY	SHARED TOILET FACILITY	EXCLUSIVE TOILET FACILITY	NO FACILITY
BOLIVIA (DHS5 2008)	21.52	78.48	28.76
HAITI (DHS6 2012)	42.64	57.36	26.07
NICARAGUA (DHS4 2001)	7.04	92.96	16.05
HONDURAS (DHS6 2012)	11.05	88.95	11.45
PERU (DHS6 2012)	7.93	92.07	9.27
COLOMBIA (DHS7 2015)	5.39	94.61	6.62
GUATEMALA (DHS7 2014-2015)	13.67	86.33	6.22
VENEZUELA (MICS2 2000)	20.64	79.36	4.48
PANAMA (MICS5 2013)	10.06	89.94	4.32
EL SALVADOR (MICS5 2014)	12.29	87.71	2.31
DOMINICAN REPUBLIC (MICS5 2014)	13.25	86.50	2.23
BELIZE (MICS5 2015-2016)	6.92	92.98	1.08
MEXICO (MICS5 2015)	4.61	95.33	0.79
PARAGUAY (MICS5 2016)	4.18	95.77	0.69
GUYANA (MICS5 2014)	9.39	90.32	0.56
URUGUAY (MICS4 2012-2013)	4.45	95.03	0.48
CUBA (MICS5 2014)	5.11	94.76	0.36
JAMAICA (MICS4 2011)	12.71	87.18	0.27
COSTA RICA (MICS4 2011)	4.14	95.66	0.07
TRINIDAD AND TOBAGO (MICS4 2011)	4.82	95.04	0.06

Source: DHS and MICS (Shared and exclusive toilet facilities); IPUMS (Access to toilet)

PROPORTION OF POPULATION WITH ACCESS TO HYGIENE FACILITIES WITH SOAP OR DETERGENT AVAILABLE (%)

COUNTRY AND SURVEY	OBSERVED	NO FACILITY IN DWELLING/ PLOT/YARD	NO PERMISSION TO SEE OR MISSING	WATER AVAILABLE	SOAP OR DETERGENT AVAILABLE
DOMINICAN REPUBLIC (MICS5 2014)	74.95	25.05	32.26	86.96	83.91
HAITI (DHS6 2012)	74.98	25.02	14.92	56.04	37.69
GUYANA (MICS5 2014)	90.65	9.35	16.17	94.53	90.26
JAMAICA (MICS4 2011)	93.55	6.45	28.41	95.16	97.30
CUBA (MICS5 2014)	95.73	4.27	1.87	92.61	94.73
MEXICO (MICS5 2015)	97.02	2.98	5.57	97.36	94.18
GUATEMALA (DHS7 2014-2015)	97.66	2.34	3.12	92.08	83.05
HONDURAS (DHS6 2012)	97.79	2.21	6.02	96.73	89.10
TRINIDAD AND TOBAGO (MICS4 2011)	97.92	2.08	11.42	96.59	94.13
EL SALVADOR (MICS5 2014)	98.73	1.27	8.52	95.89	96.02
COSTA RICA (MICS4 2011)	98.93	1.07	15.64	98.36	80.43
PARAGUAY (MICS5 2016)	99.09	0.91	7.85	95.52	84.53
BELIZE (MICS5 2015-2016)	99.11	0.89	14.99	98.48	92.44

Source: DHS and MICS.

PROPORTION OF POPULATION USING AN IMPROVED DRINKING WATER SOURCE IN 2015, URBAN AND RURAL AREAS (%)

BLOCK	COUNTRY	URBAN	RURAL
CARIBBEAN	Haiti	64.88	47.61
	Dominican Republic	85.45	81.90
	Saint Vincent and the Grenadines	95.06	95.06
	Trinidad and Tobago	95.14	95.14
	Cuba	96.40	89.80
	Jamaica	97.49	89.43
	Antígua and Barbuda	97.87	97.87
	Suriname	98.07	88.42
	Aruba	98.09	98.09
	Guyana	98.21	98.30
	Saint Kitts and Nevis	98.30	98.30
	Bahamas	98.35	98.35
	Grenada	99.00	95.30
	Montserrat	99.02	98.98
	Guadeloupe	99.33	99.76
	Saint Lucia	99.51	95.61
	Barbados	99.74	99.74
	United States Virgin Islands	100.00	100.00
	Martinique	100.00	99.80

BLOCK	COUNTRY	URBAN	RURAL
SOUTH CONE	Argentina	99.00	99.95
	Chile	99.67	93.28
	Brazil	99.99	86.96
	Paraguay	100.00	94.95
	Uruguay	100.00	93.86
ANDEAN COUNTRIES	Peru	91.45	69.25
	Ecuador	93.43	75.52
	Venezuela	95.00	77.87
	Bolivia	96.68	75.59
	Colombia	96.83	73.82
NORTH AND CENTRAL AMERICA	Mexico	97.15	92.14
	Honduras	97.42	83.76
	El Salvador	97.49	86.54
	Panama	97.73	88.62
	Guatemala	98.41	86.82
	Belize	98.87	100.00
	Nicaragua	99.30	69.40
	Costa Rica	99.56	91.89
TOTAL LAC	-	97.40	83.90

Source: WHO/UNICEF/JMP (2017) (extracted from CEPALSTAT)

PROPORTION OF POPULATION USING AN IMPROVED SANITATION FACILITY IN 2015, URBAN AND RURAL AREAS (%)

BLOCK	COUNTRY	URBAN	RURAL
CARIBBEAN	Haiti	33.57	19.15
	Jamaica	79.90	84.07
	Saint Lucia	84.71	91.87
	Dominican Republic	86.20	75.68
	Guyana	87.90	81.95
	Suriname	88.39	61.38
	Trinidad and Tobago	91.52	91.52
	Bahamas	92.01	92.01
	Cuba	94.38	89.06
	Barbados	96.21	96.21
	United States Virgin Islands	96.40	96.39
	British Virgin Islands	97.50	97.50
	Grenada	97.50	98.30
	Aruba	97.66	97.66
	Puerto Rico	99.28	99.28

BLOCK	COUNTRY	URBAN	RURAL
SOUTH CONE	Brazil	88.00	51.51
	Paraguay	95.49	78.40
	Argentina	96.18	98.33
	Uruguay	96.62	92.60
	Chile	100.00	90.93
ANDEAN COUNTRIES	Bolivia	60.80	27.55
	Peru	82.46	53.18
	Colombia	85.15	67.95
	Ecuador	86.95	80.71
	Venezuela	97.49	69.88
NORTH AND CENTRAL AMERICA	Nicaragua	76.49	55.65
	Guatemala	77.51	49.32
	El Salvador	82.45	60.04
	Panama	83.54	57.96
	Honduras	86.72	77.72
	Mexico	87.95	74.48
	Belize	93.49	88.22
	Costa Rica	95.20	92.27
TOTAL LAC	-	87.90	64.10

Source: WHO/UNICEF/JMP (2017) (extracted from CEPALSTAT)

ACCESS TO PIPED WATER BY RURAL-URBAN STATUS (%)

COUNTRY AND CENSUS YEAR	RURAL	URBAN	ODDS RATIO	DIFFERENCE (%)
DOMINICAN REPUBLIC (2010)	68.81	89.55	3.88	20.73
ECUADOR (2010)	71.27	90.95	4.05	19.68
COSTA RICA (2011)	93.86	98.99	6.39	5.13
MEXICO (2015)	85.34	97.39	6.42	12.06
EL SALVADOR (2007)	53.97	89.07	6.95	35.10
HAITI (2003)	2.79	17.74	7.52	14.95
VENEZUELA (2001)	50.53	90.86	9.73	40.33
PARAGUAY (2002)	39.87	87.25	10.32	47.38
BOLIVIA (2001)	41.98	88.61	10.75	46.62
JAMAICA (2001)	60.20	94.53	11.42	34.33
PERU (2007)	25.92	82.91	13.87	56.99
NICARAGUA (2005)	34.38	88.94	15.34	54.56
PANAMA (2010)	75.35	98.16	17.49	22.81
COLOMBIA (2005)	46.74	93.93	17.63	47.19

COUNTRY AND CENSUS YEAR	RURAL	URBAN	ODDS RATIO	DIFFERENCE (%)
BRAZIL (2010)	69.29	97.66	18.53	28.37
CHILE (2002)	79.19	99.66	77.96	20.47

Source: Based on census microdata extracted from the IPUMS-International Project.

ACCESS TO SEWAGE SYSTEMS OR SEPTIC TANKS BY RURAL-URBAN STATUS (%)

COUNTRY AND CENSUS YEAR	RURAL	URBAN	ODDS RATIO	DIFFERENCE (%)
COSTA RICA (2011)	89.69	97.25	4.07	7.57
JAMAICA (2001)	36.92	78.87	6.38	41.95
DOMINICAN REPUBLIC (2010)	37.44	81.02	7.13	43.58
ECUADOR (2010)	52.46	91.12	9.29	38.65
VENEZUELA (2001)	46.07	90.64	11.34	44.58
PANAMA (2010)	23.87	78.67	11.76	54.79
MEXICO (2015)	74.79	97.26	11.96	22.47
BRAZIL (2010)	19.14	74.11	12.09	54.96
PARAGUAY (2002)	28.07	85.75	15.42	57.68
EL SALVADOR (2007)	8.25	63.04	18.97	54.79
BOLIVIA (2001)	5.24	58.39	25.36	53.15
CHILE (2002)	52.56	97.07	29.88	44.51
NICARAGUA (2005)	2.42	44.47	32.30	42.05
PERU (2007)	7.72	77.96	42.30	70.24

Source: Based on census microdata extracted from the IPUMS-International Project.

ACCESS TO TOILET BY RURAL-URBAN STATUS (%)

COUNTRY AND CENSUS YEAR	RURAL	URBAN	ODDS RATIO	DIFFERENCE (%)
JAMAICA (2001)	98.01	98.36	1.22	0.35
PARAGUAY (2002)	98.76	99.26	1.69	0.50
DOMINICAN REPUBLIC (2010)	88.12	97.07	4.47	8.95
HAITI (2003)	58.91	89.23	5.78	30.32
CHILE (2002)	97.02	99.57	7.08	2.55
PERU (2007)	60.16	92.29	7.92	32.13
BOLIVIA (2001)	36.09	83.23	8.79	47.14
MEXICO (2015)	92.08	99.15	10.07	7.08
NICARAGUA (2005)	70.77	96.66	11.97	25.90
ECUADOR (2010)	83.75	98.55	13.15	14.80
VENEZUELA (2001)	59.52	95.13	13.27	35.61

COUNTRY AND CENSUS YEAR	RURAL	URBAN	ODDS RATIO	DIFFERENCE (%)
EL SALVADOR (2007)	85.98	98.85	14.06	12.88
COLOMBIA (2005)	68.19	96.88	14.48	28.69
PANAMA (2010)	81.95	98.99	21.69	17.04

Source: Based on census microdata extracted from the IPUMS-International Project .

ACCESS TO PIPED WATER BY LITERACY STATUS (%)

COUNTRY AND CENSUS YEAR	ILITERATE	LITERATE	ODDS RATIO	DIFFERENCE (%)
DOMINICAN REPUBLIC (2010)	80.64	85.03	1.36	4.39
CHILE (2002)	94.24	97.36	2.25	3.12
EL SALVADOR (2007)	63.01	79.39	2.26	16.38
VENEZUELA (2001)	76.49	88.06	2.27	11.57
ECUADOR (2010)	71.42	85.21	2.30	13.79
PERU (2007)	51.92	72.03	2.38	20.11
BOLIVIA (2001)	54.95	74.80	2.43	19.85
COSTA RICA (2011)	94.37	97.86	2.73	3.49
ARGENTINA (2010)	94.16	97.86	2.83	3.70
MEXICO (2015)	87.79	95.32	2.84	7.54
COLOMBIA (2005)	67.65	85.69	2.86	18.04
NICARAGUA (2005)	42.92	71.77	3.38	28.85
HAITI (2003)	3.46	12.92	4.14	9.46
BRAZIL (2010)	81.06	94.93	4.37	13.87
URUGUAY (2011)	95.45	98.93	4.42	3.48
PANAMA (2010)	67.02	92.70	6.25	25.68

Source: Based on census microdata extracted from the IPUMS-International Project.

ACCESS TO SEWAGE SYSTEMS OR SEPTIC TANKS BY LITERACY STATUS (%)

COUNTRY AND CENSUS YEAR	ILITERATE	LITERATE	ODDS RATIO	DIFFERENCE (%)
ARGENTINA (2010)	66.41	78.27	1.82	11.86
CHILE (2002)	85.11	92.14	2.05	7.03
DOMINICAN REPUBLIC (2010)	55.43	73.24	2.20	17.81
COSTA RICA (2011)	89.22	95.75	2.72	6.53
URUGUAY (2011)	97.83	99.21	2.79	1.38
BRAZIL (2010)	44.73	69.52	2.82	24.79
EL SALVADOR (2007)	23.74	47.56	2.91	23.82
PERU (2007)	38.50	64.70	2.93	26.20
BOLIVIA (2001)	20.34	42.92	2.94	22.58
ECUADOR (2010)	55.24	79.20	3.08	23.95

COUNTRY AND CENSUS YEAR	ILITERATE	LITERATE	ODDS RATIO	DIFFERENCE (%)
VENEZUELA (2001)	69.18	88.62	3.47	19.43
MEXICO (2015)	79.93	93.28	3.49	13.35
NICARAGUA (2005)	8.59	31.52	4.90	22.92
PANAMA (2010)	20.23	64.07	7.03	43.84

Source: Based on census microdata extracted from the IPUMS-International Project.

ACCESS TO TOILET BY LITERACY STATUS (%)

COUNTRY AND CENSUS YEAR	ILITERATE	LITERATE	ODDS RATIO	DIFFERENCE (%)
CHILE (2002)	98.68	99.33	1.99	0.65
ARGENTINA (2010)	94.42	97.64	2.44	3.22
PERU (2007)	72.02	86.55	2.50	14.53
DOMINICAN REPUBLIC (2010)	90.22	95.94	2.56	5.72
BOLIVIA (2001)	46.22	69.90	2.70	23.68
HAITI (2003)	58.40	80.63	2.97	22.23
ECUADOR (2010)	83.50	94.23	3.23	10.73
EL SALVADOR (2007)	87.49	95.85	3.30	8.36
VENEZUELA (2001)	79.17	93.29	3.66	14.12
COLOMBIA (2005)	76.97	92.68	3.79	15.72
MEXICO (2015)	92.80	98.03	3.87	5.23
NICARAGUA (2005)	70.64	90.62	4.02	19.99
URUGUAY (2011)	93.65	98.59	4.75	4.94
PANAMA (2010)	70.60	95.52	8.88	24.92

Source: Based on census microdata extracted from the IPUMS-International Project.

ACCESS TO PIPED WATER BY INDIGENOUS STATUS (%)

COUNTRY AND CENSUS YEAR	INDIGENOUS	NON-INDIGENOUS	ODDS RATIO	DIFFERENCE (%)
URUGUAY (2011)	98.96	98.85	0.90	-0.11
ECUADOR (2010)	76.90	84.12	1.59	7.23
EL SALVADOR (2007)	60.93	75.98	2.03	15.05
BOLIVIA (2001)	66.81	82.81	2.39	16.00
MEXICO (2015)	89.55	96.04	2.83	6.49
NICARAGUA (2005)	38.91	65.07	2.93	26.16
PARAGUAY (2002)	37.03	67.71	3.57	30.68
CHILE (2002)	85.84	97.48	6.39	11.64
BRAZIL (2010)	65.25	93.37	7.50	28.12
COLOMBIA (2005)	40.99	83.93	7.52	42.94
COSTA RICA (2011)	81.86	97.93	10.50	16.07
PANAMA (2010)	60.16	94.35	11.05	34.19

Source: Based on census microdata extracted from the IPUMS-International Project.

ACCESS TO SEWAGE SYSTEMS OR SEPTIC TANKS BY INDIGENOUS STATUS (%)S\

COUNTRY AND CENSUS YEAR	INDIGENOUS	NON-INDIGENOUS	ODDS RATIO	DIFFERENCE (%)
URUGUAY (2011)	99.16	99.09	0.93	-0.07
EL SALVADOR (2007)	33.89	42.58	1.45	8.69
BOLIVIA (2001)	34.62	54.33	2.25	19.71
NICARAGUA (2005)	10.31	25.81	3.03	15.51
CHILE (2002)	76.55	91.87	3.46	15.32
BRAZIL (2010)	35.71	66.79	3.62	31.08
MEXICO (2015)	81.02	95.19	4.63	14.16
ECUADOR (2010)	42.97	79.27	5.08	36.30
PANAMA (2010)	20.05	64.93	7.38	44.88
COSTA RICA (2011)	69.80	95.75	9.75	25.95
PARAGUAY (2002)	2.45	61.88	64.72	59.43

Source: Based on census microdata extracted from the IPUMS-International Project.

ACCESS TO TOILET BY INDIGENOUS STATUS (%)

COUNTRY AND CENSUS YEAR	INDIGENOUS	NON-INDIGENOUS	ODDS RATIO	DIFFERENCE (%)
URUGUAY (2011)	98.13	98.34	1.13	0.21
NICARAGUA (2005)	76.14	85.14	1.80	9.00
CHILE (2002)	98.38	99.27	2.25	0.90
EL SALVADOR (2007)	84.18	94.06	2.98	9.88
MEXICO (2015)	94.90	98.27	3.05	3.37
BOLIVIA (2001)	57.77	83.54	3.71	25.77
ECUADOR (2010)	71.14	94.69	7.24	23.55
COLOMBIA (2005)	52.94	91.20	9.21	38.26
PARAGUAY (2002)	91.69	99.17	10.78	7.48
PANAMA (2010)	58.89	97.78	30.79	38.89

Source: Based on census microdata extracted from the IPUMS-International Project.

ACCESS TO PIPED WATER BY RACE (%)

COUNTRY AND CENSUS YEAR	NON-WHITE	WHITE	ODDS RATIO	DIFFERENCE (%)
CUBA (2002)	76.03	78.82	1.17	2.79
URUGUAY (2011)	98.48	98.89	1.38	0.41
ECUADOR (2010)	83.30	88.45	1.54	5.15
EL SALVADOR (2007)	75.03	82.23	1.54	7.20
COSTA RICA (2011)	97.11	98.11	1.54	1.00
COLOMBIA (2005)	64.08	85.73	3.37	21.65
BRAZIL (2010)	90.00	96.82	3.39	6.82
JAMAICA (2001)	77.87	97.59	11.51	19.72

Source: Based on census microdata extracted from the IPUMS-International Project.

ACCESS TO SEWAGE SYSTEMS OR SEPTIC TANKS BY RACE (%)

COUNTRY AND CENSUS YEAR	NON-WHITE	WHITE	ODDS RATIO	DIFFERENCE (%)
CUBA (2002)	65.97	73.93	1.46	7.96
COSTA RICA (2011)	93.19	96.16	1.83	2.97
EL SALVADOR (2007)	40.44	57.06	1.96	16.62
BRAZIL (2010)	58.72	75.16	2.13	16.44
URUGUAY (2011)	98.22	99.19	2.21	0.97
ECUADOR (2010)	76.00	87.65	2.24	11.64
JAMAICA (2001)	58.47	97.32	25.81	38.85

Source: Based on census microdata extracted from the IPUMS-International Project.

ACCESS TO TOILET BY RACE (%)

COUNTRY AND CENSUS YEAR	NON-WHITE	WHITE	ODDS RATIO	DIFFERENCE (%)
PUERTO RICO (2010)	99.67	99.55	0.74	-0.12
CUBA (2002)	91.89	92.86	1.15	0.97
EL SALVADOR (2007)	93.82	95.56	1.42	1.75
URUGUAY (2011)	96.72	98.49	2.21	1.77
ECUADOR (2010)	92.75	97.42	2.95	4.67
COLOMBIA (2005)	74.70	92.56	4.22	17.86
JAMAICA (2001)	98.18	100.00		1.82

Source: Based on census microdata extracted from the IPUMS-International Project.

ACCESS TO PIPED WATER BY EDUCATIONAL ATTAINMENT OF HOUSEHOLD HEAD STATUS (%)

COUNTRY AND CENSUS YEAR	LESS THAN PRIMARY COMPLETED	PRIMARY COMPLETED	SECONDARY COMPLETED	UNIVERSITY COMPLETED	ODDS RATIO	DIFFERENCE (%) BETWEEN "UNIVERSITY COMPLETED" AND "LESS THAN PRIMARY COMPLETED"
DOMINICAN REPUBLIC (2010)	80.27	85.15	88.16	90.11	2.24	9.84
VENEZUELA (2001)	76.98	88.10	92.67	94.63	5.27	17.64
CUBA (2002)	70.03	74.81	84.23	92.56	5.32	22.53
PERU (2007)	54.07	61.06	80.49	91.87	9.60	37.80
TRINIDAD AND TOBAGO (2011)	89.24	89.40	94.03	98.82	10.08	9.57
COSTA RICA (2011)	94.16	97.95	99.19	99.50	12.44	5.34
COLOMBIA (2005)	68.97	87.26	94.70	97.52	17.66	28.55
NICARAGUA (2005)	50.02	78.45	89.29	95.99	23.92	45.97
MEXICO (2015)	89.58	94.66	98.19	99.55	25.75	9.97

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COUNTRY AND CENSUS YEAR	LESS THAN PRIMARY COMPLETED	PRIMARY COMPLETED	SECONDARY COMPLETED	UNIVERSITY COMPLETED	ODDS RATIO	DIFFERENCE (%) BETWEEN "UNIVERSITY COMPLETED" AND "LESS THAN PRIMARY COMPLETED"
URUGUAY (2011)	96.94	98.83	99.70	99.88	26.96	2.94
BOLIVIA (2001)	55.87	73.97	89.21	97.84	35.76	41.97
EL SALVADOR (2007)	65.77	82.73	94.73	99.02	52.43	33.25
CHILE (2002)	91.48	97.27	99.57	99.84	57.98	8.36
PARAGUAY (2002)	51.28	73.98	94.14	98.61	67.23	47.33
JAMAICA (2001)	63.93	72.35	84.29	99.27	76.30	35.33

Source: Based on census microdata extracted from the IPUMS-International Project.

ACCESS TO SEWAGE SYSTEMS OR SEPTIC TANKS BY EDUCATIONAL ATTAINMENT OF HOUSEHOLD HEAD STATUS (%)

COUNTRY AND CENSUS YEAR	LESS THAN PRIMARY COMPLETED	PRIMARY COMPLETED	SECONDARY COMPLETED	UNIVERSITY COMPLETED	ODDS RATIO	DIFFERENCE (%) BETWEEN "UNIVERSITY COMPLETED" AND "LESS THAN PRIMARY COMPLETED"
CUBA (2002)	61.24	67.12	79.52	91.07	6.45	29.83
PERU (2007)	39.73	50.33	77.01	91.56	16.45	51.82
COSTA RICA (2011)	88.25	95.89	98.38	99.31	19.18	11.06

COUNTRY AND CENSUS YEAR	LESS THAN PRIMARY COMPLETED	PRIMARY COMPLETED	SECONDARY COMPLETED	UNIVERSITY COMPLETED	ODDS RATIO	DIFFERENCE (%) BETWEEN "UNIVERSITY COMPLETED" AND "LESS THAN PRIMARY COMPLETED"
DOMINICAN REPUBLIC (2010)	52.55	73.76	87.08	96.18	22.74	43.63
CHILE (2002)	78.94	91.00	97.92	99.16	31.39	20.22
NICARAGUA (2005)	10.91	34.49	55.85	80.86	34.50	69.95
URUGUAY (2011)	98.11	98.98	99.71	99.95	35.86	1.83
MEXICO (2015)	82.98	92.68	98.10	99.47	38.22	16.49
BOLIVIA (2001)	18.92	36.38	67.88	91.21	44.46	72.29
EL SALVADOR (2007)	25.31	50.21	78.77	94.27	48.56	68.96
JAMAICA (2001)	41.81	50.35	67.11	97.97	67.22	56.17
PARAGUAY (2002)	41.27	69.27	93.98	98.46	91.17	57.19
VENEZUELA (2001)	69.80	88.20	97.38	99.77	191.79	29.97

Source: Based on census microdata extracted from the IPUMS-International Project.

ACCESS TO TOILET BY EDUCATIONAL ATTAINMENT OF HOUSEHOLD HEAD STATUS (%)

COUNTRY AND CENSUS YEAR	LESS THAN PRIMARY COMPLETED	PRIMARY COMPLETED	SECONDARY COMPLETED	UNIVERSITY COMPLETED	ODDS RATIO	DIFFERENCE (%) BETWEEN "UNIVERSITY COMPLETED" AND "LESS THAN PRIMARY COMPLETED"
PUERTO RICO (2010)	99.43	99.59	99.56	99.71	2.00	0.28
CUBA (2002)	90.65	91.28	94.65	97.90	4.80	7.24
PERU (2007)	74.20	81.10	91.98	97.24	12.23	23.03
CHILE (2002)	98.47	99.17	99.68	99.89	13.54	1.41
DOMINICAN REPUBLIC (2010)	91.39	95.71	97.99	99.58	22.56	8.19
PARAGUAY (2002)	98.78	99.07	99.62	99.95	24.90	1.17
NICARAGUA (2005)	77.55	93.17	97.27	99.07	30.75	21.51
BOLIVIA (2001)	47.63	68.55	87.14	97.77	48.14	50.14
COLOMBIA (2005)	80.29	93.85	98.06	99.52	51.40	19.23
EL SALVADOR (2007)	90.36	97.48	99.49	99.80	53.03	9.44
MEXICO (2015)	94.47	97.77	99.46	99.91	64.50	5.44
URUGUAY (2011)	96.56	98.02	99.64	99.95	66.52	3.39
JAMAICA (2001)	97.28	97.84	98.53	99.97	97.27	2.69
VENEZUELA (2001)	80.25	93.17	98.67	99.97	874.49	19.72
TRINIDAD AND TOBAGO (2011)	100.00	100.00	100.00	100.00		0.00

Source: Based on census microdata extracted from the IPUMS-International Project.

PROPORTION OF THE POPULATION WITH NO WATER ON PREMISES AND PERSON COLLECTING WATER

COUNTRY AND SURVEY	ADULT WOMAN (AGE 15+ YEARS)	ADULT MAN (AGE 15+ YEARS)	FEMALE CHILD (UNDER 15)	MALE CHILD (UNDER 15)	POPULATION WITH NO WATER ON PREMISES	CHILDREN TOTAL (%)
PERU (DHS6 2012)	71.22	20.68	3.85	4.24	19.53	8.10
EL SALVADOR (MICS5 2014)	56.73	36.14	3.87	3.27	14.00	7.13
HONDURAS (DHS6 2012)	66.33	18.56	7.90	7.22	13.75	15.12
JAMAICA (MICS4 2011)	43.75	49.79	2.68	3.78	11.17	6.46
DOMINICAN REPUBLIC (MICS5 2014)	44.10	49.11	3.32	3.47	7.25	6.79
CUBA (MICS5 2014)	26.72	73.28	0.00	0.00	7.07	0.00
GUYANA (MICS5 2014)	33.38	57.33	3.61	5.68	6.67	9.29
PANAMA (MICS5 2013)	59.54	32.26	4.30	3.91	4.32	8.21
BELIZE (MICS5 2015-2016)	35.93	56.69	1.32	6.06	4.08	7.38
PARAGUAY (MICS5 2016)	61.03	28.33	6.26	4.38	3.11	10.64
MEXICO (MICS5 2015)	49.76	42.61	1.33	6.30	2.86	7.63
TRINIDAD AND TOBAGO (MICS4 2011)	29.90	67.93	0.00	0.00	1.07	0.00
URUGUAY (MICS4 2012-2013)	79.32	20.68	0.00	0.00	1.07	0.00
COSTA RICA (MICS4 2011)	61.29	32.26	3.23	3.23	0.44	6.45

Source: DHS and MICS.
Note: No distinction was made in Cuba between the sex of the children (people under 15 years old), which totaled 0.1%.

PROPORTION OF POPULATION USING AT LEAST BASIC DRINKING WATER SERVICES BY WEALTH QUINTILES (%)

COUNTRY AND SURVEY	Q1	Q2	Q3	Q4	Q5
BELIZE (MICS 2011)	94.62	98.35	98.69	99.75	99.68
BOLIVIA (DHS 2008)	59.62	81.85	95.86	98.84	99.55
COLOMBIA (DHS 2010)	69.73	91.90	97.19	99.58	99.82
COSTA RICA (MICS 2011)	95.50	98.73	99.37	99.53	99.99
DOMINICAN REPUBLIC (MICS 2014)	93.31	98.02	98.56	99.08	99.35
GUYANA (MICS 2014)	80.88	98.47	99.56	99.42	99.76

COUNTRY AND SURVEY	Q1	Q2	Q3	Q4	Q5
HONDURAS (DHS 2012)	81.20	86.34	95.69	98.35	99.58
HAITI (DHS 2012)	21.99	31.01	59.45	84.75	92.06
JAMAICA (MICS 2011)	88.53	92.99	99.88	95.41	98.05
SAINT LUCIA (MICS 2012)	97.31	99.62	99.71	99.95	99.31
PANAMA (MICS 2013)	86.61	99.80	99.84	99.95	99.78
PERU (DHS 2012)	71.08	82.10	90.59	97.07	99.67
EL SALVADOR (MICS 2014)	64.98	80.92	87.09	93.81	97.63
SURINAME (MICS 2011)	83.23	99.10	99.55	99.46	99.62

Source: WHO/UNICEF/JMP (2017)

PROPORTION OF POPULATION USING AT LEAST BASIC SANITATION SERVICES BY WEALTH QUINTILES (%)

COUNTRY AND SURVEY	Q1	Q2	Q3	Q4	Q5
BELIZE (MICS 2011)	74.45	84.55	91.44	97.29	98.22
BOLIVIA (DHS 2011)	15.37	26.03	36.99	53.57	82.98
COLOMBIA (DHS 2010)	62.38	82.41	89.01	94.52	97.90
COSTA RICA (MICS 2011)	87.93	92.26	97.71	98.07	96.53
DOMINICAN REPUBLIC (MICS 2014)	58.40	76.45	88.14	94.76	98.41
GUYANA (MICS 2014)	69.57	86.05	88.19	93.94	96.48
HONDURAS (DHS 2012)	56.01	61.85	75.01	79.93	86.60
HAITI (DHS 2012)	11.30	12.47	21.54	31.59	61.90
JAMAICA (MICS 2011)	75.76	82.92	83.90	94.53	98.88
SAINT LUCIA (MICS 2012)	71.80	86.40	94.93	97.52	98.96
PANAMA (MICS 2013)	70.76	89.13	94.68	97.37	99.29
PERU (DHS 2012)	45.07	57.17	70.81	86.93	98.20
EL SALVADOR (MICS 2014)	64.98	80.92	87.09	93.81	97.63
SURINAME (MICS 2011)	45.93	83.94	90.22	92.83	96.37

Source: WHO/UNICEF/JMP (2017)

PROPORTION OF POPULATION USING BASIC HYGIENE FACILITIES BY WEALTH QUINTILES (%)

COUNTRY AND SURVEY	Q1	Q2	Q3	Q4	Q5
BELIZE (MICS 2011)	27.84	37.28	41.93	37.13	36.11
COSTA RICA (MICS 2011)	46.55	46.52	54.56	40.71	24.21
DOMINICAN REPUBLIC (MICS 2014)	27.60	45.49	61.60	74.83	85.03
GUYANA (MICS 2014)	65.60	73.78	80.91	84.54	92.96
HONDURAS (DHS 2012)	77.36	83.74	88.22	90.51	93.59
HAITI (DHS 2012)	23.47	29.28	34.56	38.87	54.02
JAMAICA (MICS 2011)	56.64	67.45	60.18	71.32	79.27
SAINT LUCIA (MICS 2012)	49.04	53.58	49.51	35.62	37.78
EL SALVADOR (MICS 2014)	84.21	90.16	94.05	94.32	95.04
SURINAME (MICS 2011)	29.87	30.56	25.35	24.76	21.30

Fuente: WHO/UNICEF/JMP (2017)

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ACCESS TO PIPED WATER BY THE WHITE URBAN POPULATION LIVING IN HOUSEHOLDS HEADED BY PEOPLE WITH UNIVERSITY COMPLETED IN COMPARISON WITH THE BLACK RURAL POPULATION LIVING IN HOUSEHOLDS HEADED BY PEOPLE WITH LESS THAN PRIMARY EDUCATION COMPLETED

COUNTRY AND CENSUS YEAR	BLACK RURAL POPULATION LIVING IN HOUSEHOLDS HEADED BY PEOPLE WITH LESS THAN PRIMARY EDUCATION COMPLETED	WHITE URBAN POPULATION LIVING IN HOUSEHOLDS HEADED BY PEOPLE WITH UNIVERSITY COMPLETED	ODDS RATIO	DIFFERENCE (%)
COSTA RICA (2011)	84.29	99.79	89.25	15.51
BRAZIL (2010)	61.65	99.77	275.66	38.12
JAMAICA (2001)	55.16	99.36	126.02	44.20
ECUADOR (2010)	44.91	99.21	154.35	54.30
EL SALVADOR (2007)	42.51	99.60	334.19	57.08
COLOMBIA (2005)	36.43	99.08	187.75	62.65

Source: Based on census microdata extracted from the IPUMS-International Project.

ACCESS TO SEWAGE SYSTEMS OR SEPTIC TANKS BY THE WHITE URBAN POPULATION LIVING IN HOUSEHOLDS HEADED BY PEOPLE WITH UNIVERSITY COMPLETED IN COMPARISON WITH THE BLACK RURAL POPULATION LIVING IN HOUSEHOLDS HEADED BY PEOPLE WITH LESS THAN PRIMARY EDUCATION COMPLETED

COUNTRY AND CENSUS YEAR	BLACK RURAL POPULATION LIVING IN HOUSEHOLDS HEADED BY PEOPLE WITH LESS THAN PRIMARY EDUCATION COMPLETED	WHITE URBAN POPULATION LIVING IN HOUSEHOLDS HEADED BY PEOPLE WITH UNIVERSITY COMPLETED	ODDS RATIO	DIFFERENCE (%)
COSTA RICA (2011)	73.71	99.55	78.67	25.83
ECUADOR (2010)	34.21	99.05	200.73	64.84
JAMAICA (2001)	29.89	100.00		70.11
BRAZIL (2010)	16.54	92.93	66.32	76.39
EL SALVADOR (2007)	5.80	97.31	588.58	91.52

Source: Based on census microdata extracted from the IPUMS-International Project.

ACCESS TO TOILET BY THE WHITE URBAN POPULATION LIVING IN HOUSEHOLDS HEADED BY PEOPLE WITH UNIVERSITY COMPLETED IN COMPARISON WITH THE BLACK RURAL POPULATION LIVING IN HOUSEHOLDS HEADED BY PEOPLE WITH LESS THAN PRIMARY EDUCATION COMPLETED

COUNTRY AND CENSUS YEAR	BLACK RURAL POPULATION LIVING IN HOUSEHOLDS HEADED BY PEOPLE WITH LESS THAN PRIMARY EDUCATION COMPLETED	WHITE URBAN POPULATION LIVING IN HOUSEHOLDS HEADED BY PEOPLE WITH UNIVERSITY COMPLETED	ODDS RATIO	DIFFERENCE (%)
JAMAICA (2001)	97.25	100.00		2.75
EL SALVADOR (2007)	88.89	99.92	154.96	11.03
ECUADOR (2010)	79.00	99.91	303.20	20.91
COLOMBIA (2005)	52.96	99.84	569.84	46.89

Source: Based on census microdata extracted from the IPUMS-International Project.

INEQUALITY FACTOR (D)

ISO3	Country	D (Water)	D (Sanitation)
ARG	Argentina	1.03	6.70
BOL	Bolivia	16.05	33.68
BRA	Brazil	5.61	22.85
CHL	Chile	2.64	5.66
COL	Colombia	15.90	
CRI	Costa Rica	1.14	1.95
CUB	Cuba	8.60	14.00
DOM	Dominican Republic	6.27	16.12
ECU	Ecuador	5.57	11.91
SLV	El Salvador	10.80	32.01
HTI	Haiti	41.08	
JAM	Jamaica	12.93	18.52
MEX	Mexico	3.65	8.20
NIC	Nicaragua	21.95	45.52
PAN	Panama	6.03	21.66
PRY	Paraguay	19.06	24.57
PER	Peru	16.00	22.68
TTO	Trinidad and Tobago	1.82	
URY	Uruguay	3.24	0.27
VEN	Venezuela	5.32	6.84

Source: Based on census microdata extracted from the IPUMS-International Project.

PROPORTION OF POPULATION USING DIFFERENT LEVELS OF DRINKING WATER AND SANITATION SERVICES IN COLOMBIA, 2015

SERVICE LEVEL	DRINKING WATER			SANITATION		
	NATIONAL	RURAL	URBAN	NATIONAL	RURAL	URBAN
SAFELY MANAGED	70.41	40.42	79.65	39.76	-	40.67
BASIC SERVICE	25.61	45.05	19.62	44.91	75.10	46.94
LIMITED SERVICE	0.15	0.54	0.03	8.49	5.71	9.35
UNIMPROVED	0.63	2.16	0.15	2.99	7.53	1.59
NO SERVICE	3.20	11.83	0.54	3.86	11.66	1.46

Source: WHO/UNICEF/JMP (2017)

PROPORTION OF POPULATION USING AT LEAST BASIC DRINKING WATER AND SANITATION SERVICES BY SUBNATIONAL REGIONS – COLOMBIA, 2015

REGION	SANITATION	DRINKING WATER
ATLANTICA	77.97	89.27
ORIENTAL	85.66	86.03
CENTRAL	89.61	91.85
PACIFICA	80.95	92.91
BOGOTA	91.86	99.87
ORINOQUIA/ AMAZONIA	78.63	86.85

Source: Based on WHO/UNICEF/JMP (2017)

PROPORTION OF POPULATION USING DIFFERENT LEVELS OF DRINKING WATER AND SANITATION SERVICES IN BRAZIL, 2015

SERVICE LEVEL	DRINKING WATER			SANITATION		
	NATIONAL	RURAL	URBAN	NATIONAL	RURAL	URBAN
SAFELY MANAGED	-	-	97.27	39.06	-	40.35
BASIC SERVICE	96.74	83.69	1.64	47.09	57.99	50.50
LIMITED SERVICE	0.56	2.69	0.20	0.84	0.90	0.83
UNIMPROVED	1.41	5.59	0.71	11.03	30.12	7.85
NO SERVICE	1.30	8.03	0.18	1.98	10.99	0.48

Source: WHO/UNICEF/JMP (2017)

PROPORTION OF POPULATION USING AT LEAST BASIC DRINKING WATER AND SANITATION SERVICES BY SUBNATIONAL REGIONS – BRAZIL, 2010

STATE	SANITATION	DRINKING WATER
RONDÔNIA	60.46	91.81
ACRE	67.49	77.81
AMAZONAS	70.08	81.10
RORAIMA	73.52	89.66

STATE	SANITATION	DRINKING WATER
PARÁ	65.51	80.63
AMAPÁ	55.95	87.54
TOCANTINS	65.29	92.78
MARANHÃO	65.93	85.40
PIAUÍ	67.96	90.28
CEARÁ	73.06	90.22
RIO GRANDE DO NORTE	72.31	95.05
PARAÍBA	73.56	90.87
PERNAMBUCO	74.74	91.43
ALAGOAS	64.50	90.13
SERGIPE	73.87	92.78
BAHIA	75.40	92.57
MINAS GERAIS	86.38	98.06
ESPÍRITO SANTO	82.64	99.18
RIO DE JANEIRO	88.69	97.95
SÃO PAULO	93.39	99.39
PARANÁ	81.59	99.29
SANTA CATARINA	86.45	99.10
RIO GRANDE DO SUL	85.49	99.15
MATO GROSSO DO SUL	69.21	97.95
MATO GROSSO	67.93	96.18
GOIÁS	73.96	97.63
DISTRITO FEDERAL	93.96	99.53

Source: Based on Demographic Census microdata (Brazil, 2010)

PROPORTION OF POPULATION USING DIFFERENT LEVELS OF DRINKING WATER AND SANITATION SERVICES AND BASIC HYGIENE FACILITIES IN MEXICO, 2015

SERVICE LEVEL	DRINKING WATER			SANITATION			HYGIENE		
	NATIONAL	RURAL	URBAN	NATIONAL	RURAL	URBAN	NATIONAL	RURAL	URBAN
	63.45	-	-	46.32	-	43.56	-	-	-
SAFELY MANAGED	33.76	90.79	98.89	40.79	76.34	46.37	82.39	76.97	83.81
BASIC SERVICE	0.40	1.53	0.10	7.99	9.52	7.59	8.73	14.23	7.29
LIMITED SERVICE	1.27	3.99	0.56	2.91	8.10	1.55	-	-	-
UNIMPROVED	1.12	3.68	0.45	1.99	6.04	0.92	8.88	8.80	8.90
SIN SERVICIO	1.12	3.68	0.45	1.99	6.04	0.92	8.88	8.80	8.90

Source: WHO/UNICEF/JMP (2017)

PROPORTION OF POPULATION USING AT LEAST BASIC DRINKING WATER AND SANITATION SERVICES BY SUBNATIONAL REGIONS – MEXICO, 2015

REGION	SANITATION	DRINKING WATER
NOROESTE	97.94	99.98
NORESTE	96.19	99.35
CENTRO	93.96	98.95
CDMX-EDO MEXICO	91.78	98.91
SUR	92.95	95.96

Source: Based on MICS5 microdata (Mexico, 2015)

PROPORTION OF POPULATION USING DIFFERENT LEVELS OF DRINKING WATER AND SANITATION SERVICES AND BASIC HYGIENE FACILITIES IN THE DOMINICAN REPUBLIC, 2015

SERVICE LEVEL	DRINKING WATER			SANITATION			HYGIENE		
	NATIONAL	RURAL	URBAN	NATIONAL	RURAL	URBAN	NATIONAL	RURAL	URBAN
	-	-	-	-	-	-	-	-	-
SAFELY MANAGED	94.38	85.50	96.74	83.39	74.76	85.68	54.97	41.90	58.44
BASIC SERVICE	2.34	6.12	1.33	10.89	13.66	10.15	15.82	16.47	15.64
LIMITED SERVICE	1.94	2.88	1.70	2.44	3.81	2.07	-	-	-
UNIMPROVED	1.34	5.50	0.24	3.29	7.77	2.09	29.22	41.63	25.91

Source: WHO/UNICEF/JMP (2017)

PROPORTION OF POPULATION USING AT LEAST BASIC DRINKING WATER AND SANITATION SERVICES BY SUBNATIONAL REGIONS – DOMINICAN REPUBLIC, 2015

REGION	SANITATION	DRINKING WATER
CIBAO NORTE	88.63	98.54
CIBAO SUR	86.38	96.51
CIBAO NORDESTE	83.28	97.92
CIBAO NOROESTE	80.01	98.03
VALDESIA	78.91	96.33
ENRIQUILLO	69.80	95.76
EL VALLE	79.01	93.13
YUMA	72.34	97.26
HIGUAMO	77.69	95.61
OZAMA/ METROPOLITANA	86.21	98.72

Source: Based on WHO/UNICEF/JMP (2017)

Pan American Health Organization

World Health Organization

REGIONAL OFFICE FOR THE Americas