

Focused Analysis

**Climate Change
Management** in Water and
Sanitation utilities

Focused Analysis

Climate Change Management in Water and Sanitation utilities

Author:

Fancisco Cubillo González

Technical and Methodological Edition:

Federico Pérez Peñalosa
Corine Cathala

Technical Collaboration:

Alfred Hans Grunwaldt
Mauro Nalesso

A product:

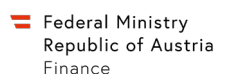
AquaRating⁺

AquaFund



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Agencia Suiza para el Desarrollo
y la Cooperación COSUDE



Auspiciado por AquaFund

This focused analysis was financed by the AquaFund Multi Donor Fund, a thematic fund of the Inter-American Development Bank (IDB), financed with Bank Ordinary Capital and partner donor agencies: Spanish Agency for International Development Cooperation (AECID), the Swiss Government through the Swiss Agency for Development and Cooperation (COSUDE) and the Swiss Secretary of State for Economic Affairs (SECO), the Government of Austria and the PepsiCo Foundation.

Copyright © 2020 Inter-American Development Bank. This work is licensed under a Creative Commons IGO 3.0 Attribution-NonCommercial-NoDerivatives (CC-IGO BY-NC-ND 3.0 IGO) license (<http://creativecommons.org/licenses/by-nc-nd/3.0/igo/legalcode>) and may be reproduced with attribution to the IDB and for any non-commercial purpose. No derivative work is allowed. Any dispute related to the use of the works of the IDB that cannot be settled amicably shall be submitted to arbitration pursuant to the UNCITRAL rules. The use of the IDB's name for any purpose other than for attribution, and the use of IDB's logo shall be subject to a separate written license agreement between the IDB and the user and is not authorized as part of this CC-IGO license.

Note that link provided above includes additional terms and conditions of the license.

The opinions expressed in this publication are those of the authors and do not necessarily reflect the views of the Inter-American Development Bank, its Board of Directors, or the countries they represent.



Contents

1. Introduction	v
-----------------------	---

CC1	Climate change management in water and sanitation utilities.....1
	CC1.1 Formal strategic positioning16
	CC1.2 Implications with respect to climate and mitigation.....18
	CC1.3 Improving knowledge about climate change in the field20
	CC1.4 Positioning with respect to service implications25
	CC1.5 Climate change training for staff and management of uncertainty in water and sanitation service management27

CC2	Commitments and practices for mitigating climate change impacts28
	CC2.1 Mitigation commitments.....28
	CC2.2 Practices and processes30
	CC2.3 Progress parameters31

CC3	Commitments and practices related to policies for adapting to climate change impacts46
	CC3.1 Planning policies.....46
	CC3.2 Operational policies.....53

CC4	Specific policies for contingency management and resilience56
	CC4.1 Management procedures and protocols in the face of climate change56
	CC4.2 Operational policies.....57

4. Appendix.....	61
A - Reliability Tables.....	61
B - New Reliability Tables.....	70
Glossary of terms.....	78
C- New elements of analysis not included in AquaRating.....	81

Introduction

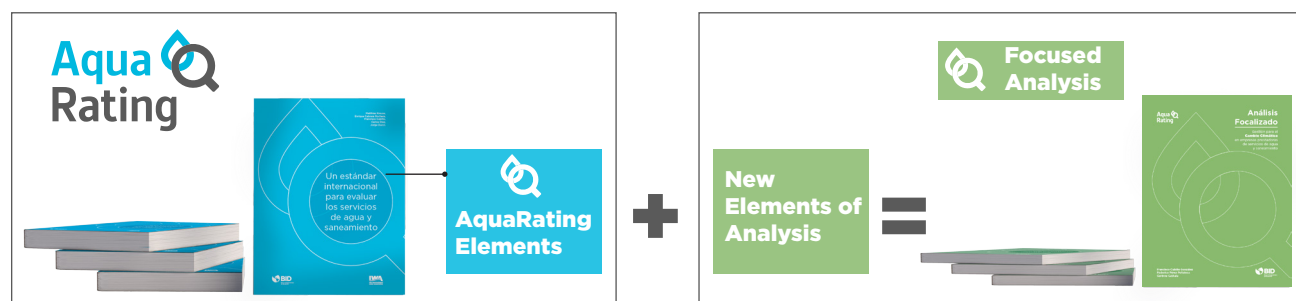
This document is part of a collection named “**Focused Analyses**,” which addresses relevant themes within the provision of water and sanitation services in a particular way.

The **Focused Analyses** aim to establish a method and criteria for the characterization and assessment of a particular aspect of the management of the provision of the aforementioned services.

The idea for developing this collection was born of the need to approach a partial and focused way of analysis from a different perspective, a concrete means, within a broad and comprehensive framework, of applying the AquaRating¹ system in the context of a company. The characterization is developed through a series of indicators and parameters that facilitate the analysis of the particular subject of the **Focused Analysis**.

A **Focused Analysis** studies the possible links with information that has already been taken into account within the **AquaRating** evaluation structure, and which complements the identification of information and additional parameters needed for a particular characterization of this new focus and perspective.

Finally, we make an assessment of the feasibility of expanding the AquaRating evaluation elements based on the experiences and new parameters identified in this document, all with the end of developing a Focused Characterization.



The purposes of a Focused Analysis include:

- arriving at a better understanding of a certain aspect of the management of water and sanitation services
- developing a more focused characterization of a certain aspect of management
- identifying potential improvements and additions to the AquaRating evaluation structure
- helping to better understand the processes and the ecosystem of a specific aspect of management

AquaRating Results and Products

The AquaRating Certification, the AquaRating Characterization, the Focused AquaRating Characterization and other AquaRating Products are based solely on the information provided by the Water and Sanitation Service Provider, and as such, the responsibility for the accuracy and authenticity of said information remains exclusively with the Service Provider. Similarly, the results of the auditing process carried out by the auditing firm are based on information provided by the Service Provider; as such, the Inter-American Development Bank is not responsible for, nor does it certify, the audit results.

The results of the AquaRating Characterization and/or the AquaRating Certification and/or the Focused Characterization, and all of the information and documents related to the implementation of AquaRating, do not necessarily reflect the opinion of the Inter-American Development Bank (IDB), nor of its Executive Director, nor the countries it represents.



Climate change management in water and sanitation utilities



Climate change (CC) represents one of the biggest challenges for life on the planet as we know it today, because of the diverse ways in which it manifests.

There is a general belief that future scenarios will be very different from those that we know, based on available records of the past, as research and scientific studies have noted substantial changes in climate across the entire planet, as well as variations in climate patterns, such as temperature and precipitation, among others.

Likewise, it is generally accepted that there is a link between some human activities and their impacts on these climate change processes and trends with respect to climate change variables.

It is not among the intentions of this document to analyze or question the principles that inform the manifestations of climate change or the links to climate change and predictions of future trends related to this subject. This document proceeds from the assumption that changes and trends are occurring that are notably different from those that are typically applied in design and infrastructure, and in those criteria that are linked to the provision of water and related services.

The recognition of changes already manifest and those that are predicted with respect to climate change, warrant the review and establishment of new methods and practices to face the new climate patterns, as well as all their implications for the provision of water and sanitation services.

Climate change management in water and sanitation utilities

This review and definition of new methods and practices should be focused mainly in the area of water and sanitation service management, to assure better levels of service under new and future conditions, both under normal and exceptional circumstances.

Similarly, it is assumed that there is a link to and impact from human activities on the climate; as a consequence, there is an emphasis on actions with a potential mitigating effect, such as the reduction of generated and emitted greenhouse gases, to contribute to current goals over the long term.

The ultimate objective of this document is to identify the parameters that allow us to know and evaluate the position, practices, and accomplishments of a company with respect to everything related to climate change; to work toward a better level of service now and in the future; and to contribute to mitigating the changes that are impacting the climate as a result of human activity.

Definition of criteria for characterization and assessment

Climate change can influence water and sanitation service management in every aspect of system functioning and the context in which it operates. Temperature and precipitation are manifestations of climate that influence the availability and management of water resources and the quantities of supply and demand.

Climate change can impact the characteristics and variability of both components: supply and demand. It can change the conditions in normal water regimes, modifying the precipitation or available natural flows. It can also modify the quality of water in the natural environment, and influence the efficacy of treatment and purification processes, which depend upon temperature and weather

conditions generally. Without a doubt, climate change can modify the frequency and intensity of extreme hydric episodes (droughts and storms, or floods).

With respect to demand, the impact of a different climate affects, in turn, water consumption and use patterns, as well as the characteristics, guarantee of availability, and costs of consumable resources.

In both approaches, operational continuity and quality of water and sanitation services are put at risk because of the varying availability of resources in necessary or expected quantities and quality, along with the economic and social impacts of floods, damage, and environmental losses.

In sum, the most relevant scenarios to consider are:

- changes in the quantity and quality of water available in the natural environment.
- changes in demand quantity and variation patterns by season (peak and seasonal factors).
- changes in the intensity and frequency of extreme weather events (droughts, precipitation, and floods).

To be sure, there are many more links between climate change and the provision of water, sanitation, and drainage services, but those enumerated above are the most significant and are the ones addressed in this document.

Considering these possible scenarios as a point of departure allows us to describe and analyze a company in terms of its strategy, positioning, and management of everything related to climate change, and should be built upon four main pillars:

- formal strategic positioning
- visible and committed positioning
- the intensity and quality of effort dedicated to climate change (mitigation and adaptation)
- the results that said efforts have produced up to the date of evaluation.

When evaluating results, it is necessary to keep in mind that efforts can take many forms and contribute primarily to results in areas that can be difficult to quantify.

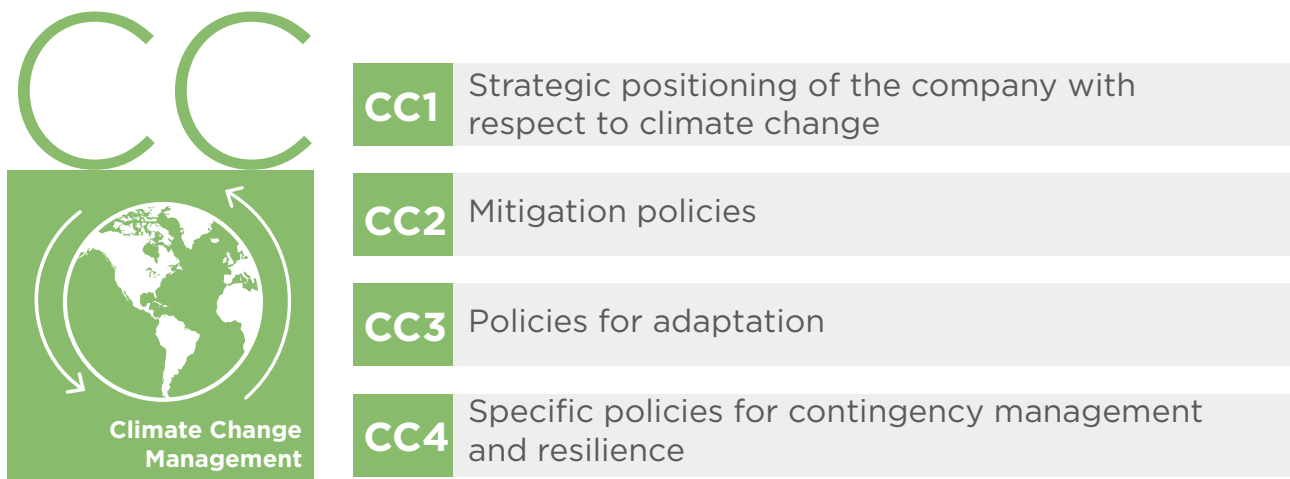
In a global way, these efforts should translate into the provision of a quality service and, especially, in reducing the risk of climate change disturbances to standard levels of service, but the quantification of risk reduction or of resilience is also complex, even when disruptive service events occur.

Even more difficult is the quantification of effects of individual mitigation efforts on the conditions that favor climate change.

In this context of intensity and quality of efforts focused on climate change, it is necessary to differentiate:

- the management actions, policies, and practices focused on mitigation, and
- the actions, policies, and practices focused on adaptation to climate change scenarios.

Taking these considerations into account, the characterization proposed in this Thematic AquaRating Evaluation has employed the following specific approaches, which include the two approaches mentioned previously, and the positioning and initiatives of a strategic nature, and the specific policies for resilience and contingency management.

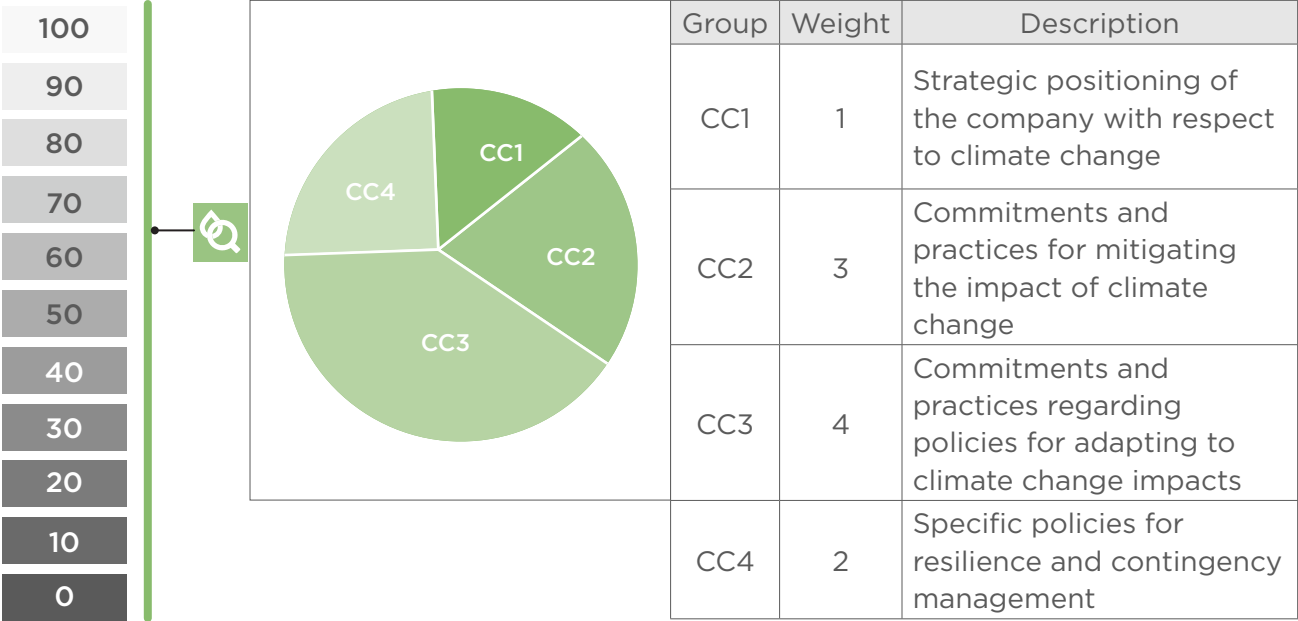


The global value of the Focused Characterization of the climate change strategy and management of climate change in the utility will be the result of the grouped and weighted characterization of the set of elements that are enumerated in this document, and which reflect both the strategic positioning as well as the specific policies of mitigation, adaptation, and preparation to face contingencies.

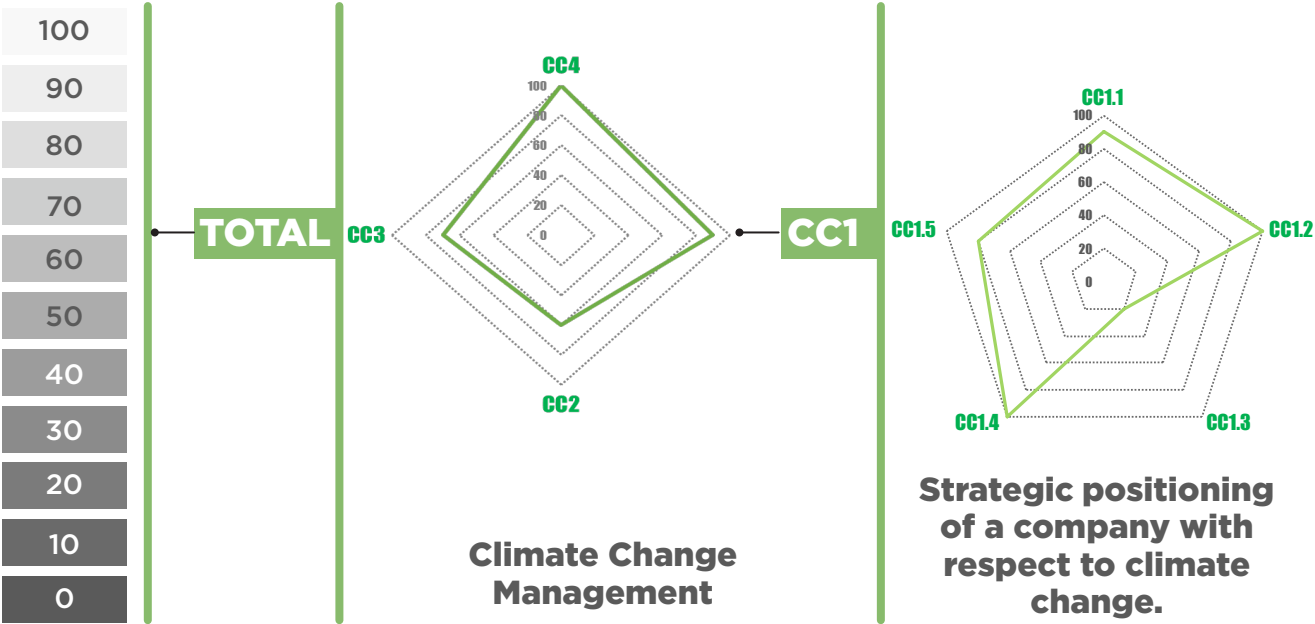
It is a parameter that encompasses items of a very distinct nature, but which transmit, in a single number, the assessed value of the general position of a company and its accomplishments.

It will be determined with values resulting from the different approaches (CC1, CC2, CC3 and CC4), weighted in accordance with the provisions accounted for in the following table, which, in turn, is broken down into their respective groups, individual practices, and indicators.

It is situated in a range between 0 and 100 and will be accompanied by a reliability factor that has been applied to determine the global value. The reliability will be the mean of the reliabilities that have resulted from each one of the approaches, each with the same weighting.



By way of example, the Focused Characterization of climate change management in water and sanitation utilities could have a final value of 62/100, as is shown in the graphic below, which is comprised of the weighted aggregated values of the four approaches, where each approach is weighted equally. For example, approach CC1, which measures “Strategic positioning of the company with respect to climate change,” has a value of 79/100, as a result of the weighting of groups that comprise it, as well as the elements with their respective calculated weights and reliabilities.

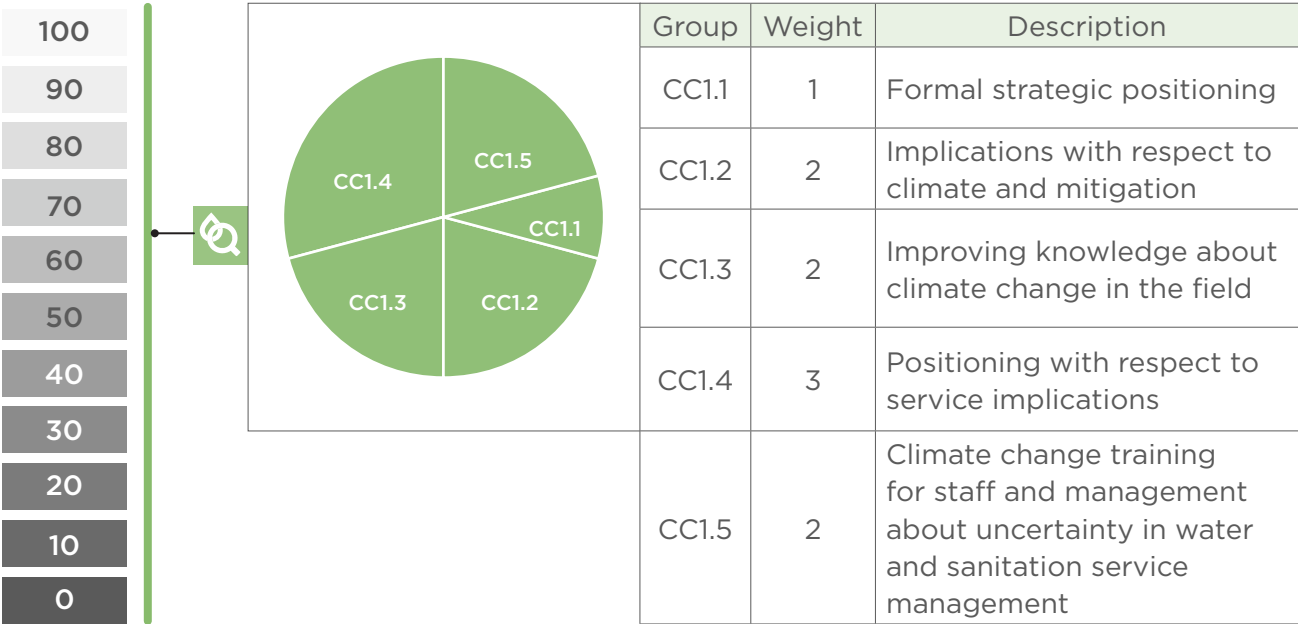


Parameters of analysis for the focused characterization of management facing climate change in water and sanitation utilities

CC1 Strategic positioning of a utility with respect to climate change

The characterization of the strategic positioning of a utility with respect to climate change will be the result of the grouped and weighted characterization of the set of elements that evaluate everything that reflects the strategic approaches in the utility, in addition to the medium- and long-term objectives, implications for levels of service, and with respect to environmental variables that have some kind of direct or indirect link to the services provided or to the practices of training or the collection, recording, and analysis of information with respect to climate variables or their effects. Specific aspects of practices that contribute to mitigation or adaptation are not evaluated within this parameter.

It will include a consolidation of groups CC1.1 to CC1.5, corresponding to the CC1 approach, with the relative weights indicated in the table below. The evaluation will be the result of these groupings, referenced on a scale from 0 to 100, which will be accompanied by the corresponding reliability value.

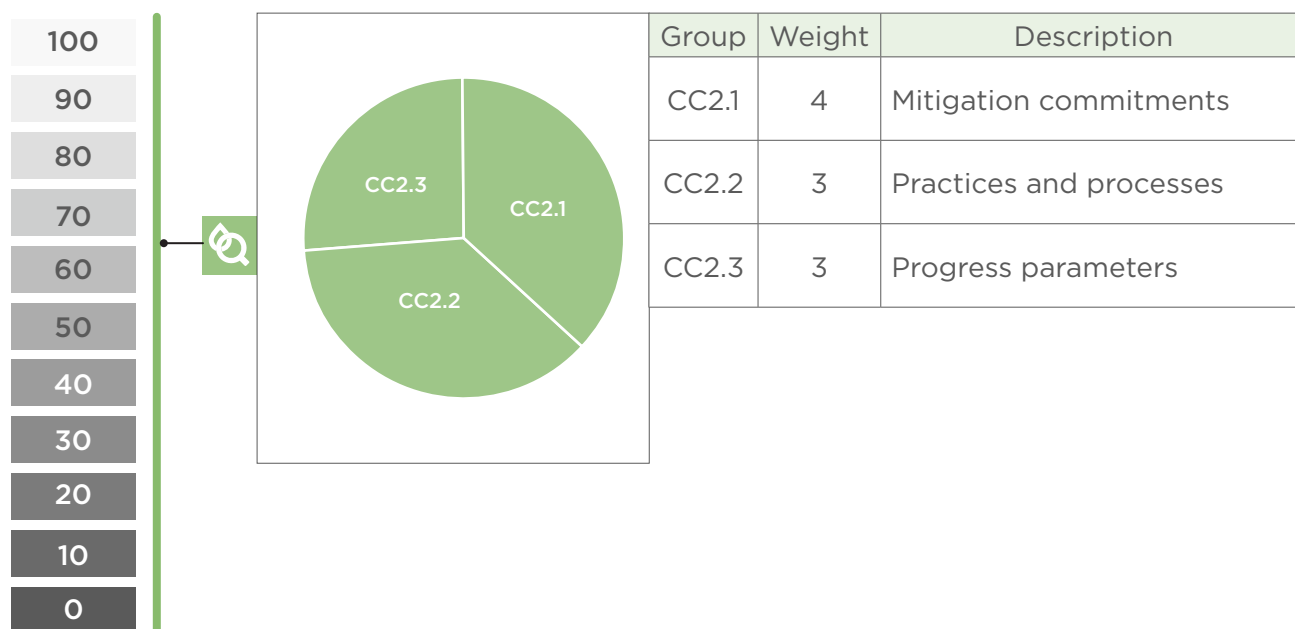


CC2

Commitments and practices for mitigating climate change impacts

The characterization of the utility's policies as they contribute to the mitigation of greenhouse gases (GHG) will be the result of the grouped and weighted characterization of the set of elements that evaluate the positions, practices, and results of the approaches focused on the mitigation of the causes of climate change. The utility's position as manifest in the commitments to modify its processes that contribute to climate change, and the practices focused on mitigation, as well as parameters that quantify the results of such practices, are evaluated.

It will include a grouping of groups CC2.1 to CC2.3, corresponding to the CC2 approach, with their relative weights as indicated in the table below. The evaluation will be the result of these groupings, referenced on a scale of 0 to 100, which will be accompanied by the corresponding reliability value.

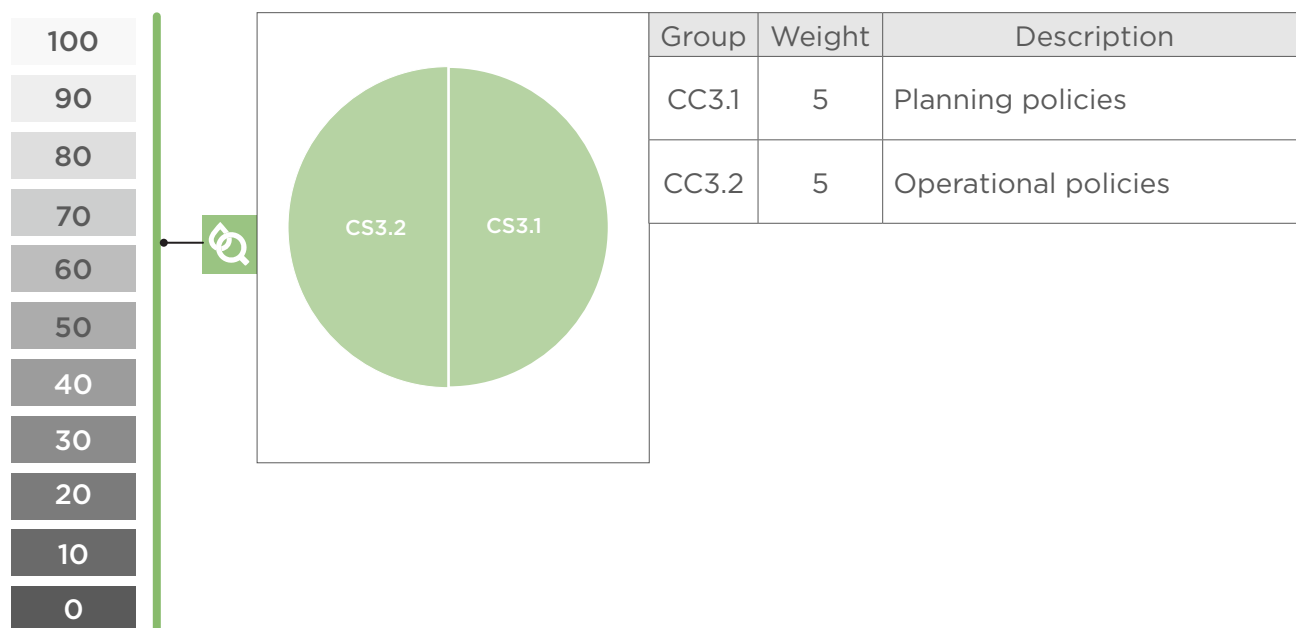


CC3

Commitments and practices related to policies for adapting to climate change impacts

The characterization of the company's policies for adapting to the observed and predicted scenarios and impacts of climate change will be the result of the grouped and weighted characterization of the set of elements that evaluate the company's policies with respect to the planning and operation of management systems that foster a better adaptation to future scenarios and episodes that are consequences of climate change.

It will include a grouping of groups CC3.1 and CC3.2 that correspond to approach CC3, with their relative weights as indicated in the table below. The evaluation will be the result of these groupings, referenced on a scale of 0 to 100, which will be accompanied by the corresponding reliability value.

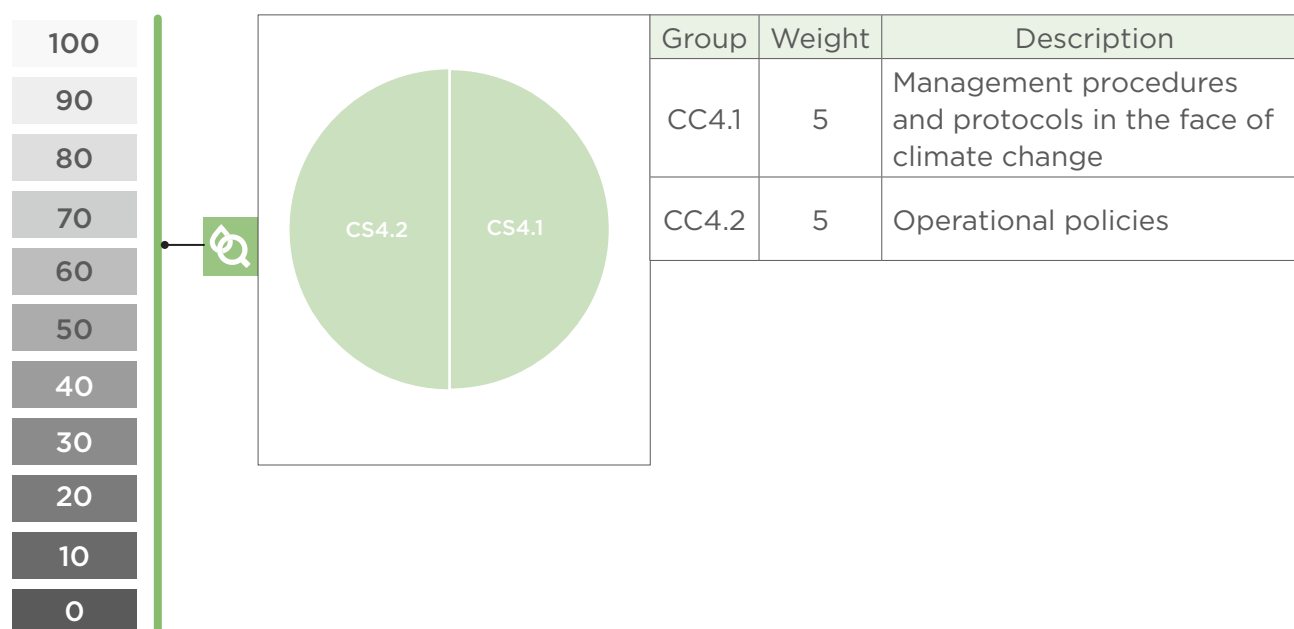


CC4

Specific policies for contingency management and resilience

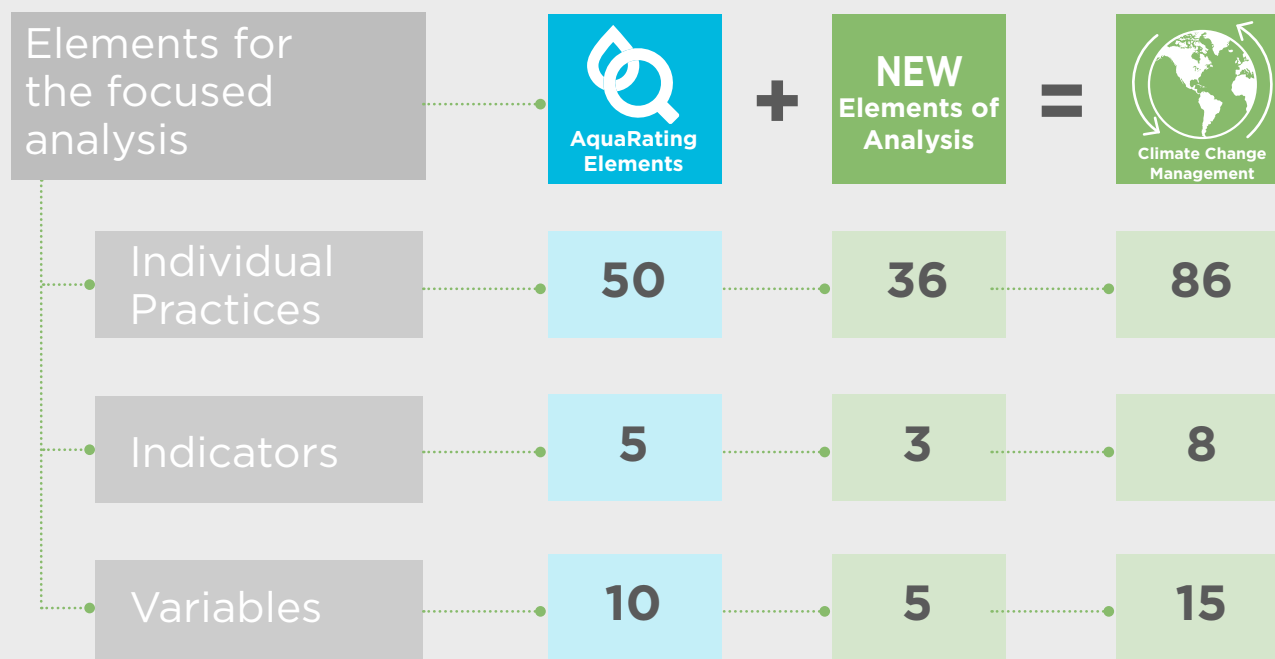
The characterization of the contingency and resilience management policies will be the result of the combined evaluation of the practices for the prevention and management of episodes that disrupt the standard conditions of service provision, especially those that are derived from climate change scenarios, as well as the management of resilience in the face of such episodes and contingencies.

It will include a grouping of groups CC4.1 and CC4.2, which correspond to approach CC4, with its relative weights as indicated in the table below. The evaluation will be the result of these groupings, referenced on a scale of 0 to 100, which will be accompanied by the corresponding reliability value.



Focused Characterization of climate change management in water and sanitation utilities

The Focused Characterization of climate change management in water and sanitation utilities is comprised of a total of 86 individual practices, eight indicators, and 15 variables resulting from the combination of elements that are included in the AquaRating standard, and of specific new elements of analysis.



Elements of analysis included in the AquaRating structure

The first step in the selection of elements to describe the positioning and management of climate change within a utility has consisted of the search and identification of the elements to be evaluated, along with the indicators, variables, and individual practices already included in


the AquaRating structure, which are related in some way to the climate change management approaches that are mentioned in previous sections.

Fifty individual practices, five elements of quantitative evaluation, and 10 variables have been identified.

The following criteria were taken into account for their selection:

- indicators or practices that evaluate aspects related to climate change approaches but which, in their assessment, might have other factors that aren't related exclusively to climate change.
- indicators and practices that provide information about some of the company's approaches to climate change have been taken into account, even if their contribution is only indirectly relevant or of only partial relevance. This has been taken into account when weighing these indicators' and practices' contributions to the global characterization or to each approach.
- those practices that address the planning or management of contingencies and anomalies have been considered, regardless of the interpretations that have been made regarding the contingencies and anomalies when reporting on the application of practices, techniques, or equipment. It is assumed that climate change scenarios will generate dysfunctions of distinct magnitude that will require anomaly management practices, independent of those practices that are specific to the management of high impact contingencies that have already been considered in this document.

It should be noted that in the current AquaRating evaluation structure, a considerable number of elements are used to describe the practices and achievements in many of the aspects related to climate change. In fact, elements of these characteristics have been found for the four approaches that were selected.

Each element taken from AquaRating maintains its original classification and is identified in the first column of the descriptive tables with a “”.

New elements of analysis not included in the AquaRating structure

In addition to the elements of evaluation and the practices considered in the AquaRating structure, it is important to take into account additional parameters, indicators, and variables in order to develop the most complete and detailed characterization of the company with respect to climate change, in accordance with the components identified in earlier sections.

The additional parameters considered include 36 individual practices, three quantitative elements of evaluation, and five variables.

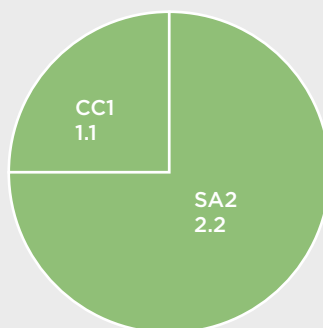




Strategic positioning of a utility with respect to climate change



CC1.1 Formal strategic positioning

This parameter evaluates the presence and visibility of climate change within the utility's strategy, with respect to the formal, documented approaches in planning.



Type ————— Best Practices

Normalization ——— Weighted by practice

AR	Group	Practice	Description	Reliability	Weight
	ES2.2	ES 2.2.2	Explicit plans or policies exist that address climate change mitigation or adaptation to climate change.	T.2	3
	CC1.1	CC1.1.1	A clear, objective position regarding climate change exists within the company's Strategic Plan.	T.201	1

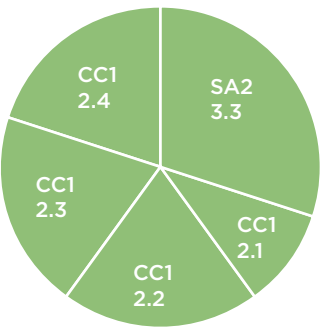
CC1.1.1

It is valid if a Strategic Plan or equivalent document establishing the utility's Strategy exists and is currently in practice (and is less than five years old), and within said Strategy, there exists some type of commitment, objective, or initiative explicitly related to climate change. It will not be considered valid if no Strategic Plan or similar document exists, or, if it exists, does not mention climate change at all, or, if mentioned, does not include any goal or course of action whose compliance or implementation can be verified.

There must be evidence of the Strategic Plan's, or Strategy's, existence, duly approved by a representative entity with the greatest authority within the utility, and of the year of its approval. In said document, there appears some explicit, verifiable objective, commitment, or initiative linked to the utility with respect to mitigation or adaptation to climate change.

CC1.2 Implications with respect to climate and mitigation

This parameter evaluates the utility’s actual involvement, as well as formal aspects, with respect to the visibility and transparency of the elements of evaluation related to the commitment and implementation of the participation and implication of distinct initiatives related to climate change mitigation or awareness, or their potential as an essential component for the development of cities and resilience in general.



Type —————→ Best Practices
Normalization —————→ Weighted by practice
Glossary Terms —————→ Green funds, carbon rights

AR	Group	Practice	Description	Reliability	Weight
	ES2.3	ES 2.3.3	Environmental responsibility reports or equivalent documents are published systematically and include all environmental parameters habitually employed internationally, including, at the very least, those produced by the GRI (Global Reporting Initiative).	T.2	3
	CC1.2	CC1.2.1	Conducts information and awareness campaigns about climate change	T.202	1
	CC1.2	CC1.2.2	The company makes contributions to green funds or similar funds, whether national or international, whose primary goal is the mitigation of damage and loss related to climate change impacts	T.203	2

AR	Group	Practice	Description	Reliability	Weight
+	CC1.2	CC1.2.3	The company is visibly, actively involved in programs or initiatives related to climate change, particularly in the urban environment, or is focused on resilience in cities, and has established clear objectives and goals	T.204	2
+	CC1.2	CC1.2.4	The company participates in emissions trading or in the acquisition of carbon rights	T.205	2

CC1.2.1

It is valid if the utility (whether individually or in collaboration) undertakes climate change training or awareness initiatives, both at the general level as well as with respect to the specific linkages to water and urban services, the company's position, or the contribution of citizens or water users. The activities or initiatives must have occurred within the past three calendar years.

CC1.2.2

It is valid if the utility has contributed, during the past three calendar years, and in any amount, to a fund whose primary goal is international financial collaboration in the fight against climate change or to mitigate the damages and losses caused by climate change. There must be evidence of the financial contribution to the corresponding fund or funds, and evidence substantiating the purpose of those funds.

CC1.2.3

It is valid if evidence substantiates involvement in activities focused on planning, design, and management, or simply preparing for resilience in the general framework for the urban environment, within the past three calendar years. Initiatives or programs must evidence consideration of the threat of climate change in any of its manifestations.

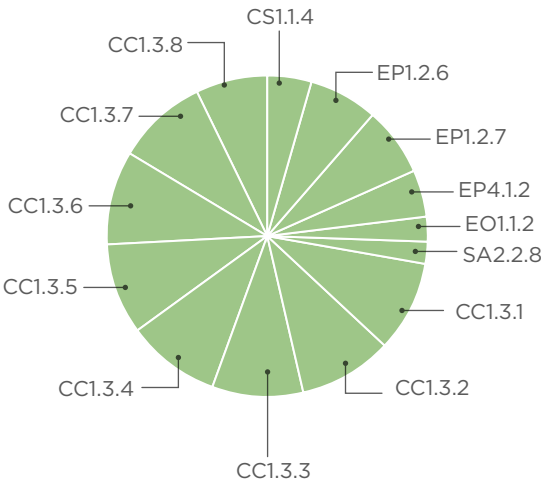
Evidence of the existence of such participation in these climate change initiatives, their scenarios, threats, and response options, occupies a relevant role that can be quantified as more than 50% of the program or initiative.

CC1.2.4



It is valid if the utility has acquired, or has signed some agreement to acquire, carbon rights, within the past three calendar years.









CC1.3 Improving knowledge about climate change in the field

The characterization of the practices for improving knowledge about the factors associated with effective climate change management will be the result of the combined evaluation of the studies and practices for acquiring and maintaining knowledge about the factors that indicate climate change or its consequences within the area of responsibility within the company or the area that influences the conditions and contexts of service provision. There exists the possibility of applying scales with greater detail than other studies that are more general in nature.



Type ————— Best Practices
Normalization ————— Weighted by practice
Glossary Terms ————— regulatory non-compliance risk areas

AR	Group	Practice	Description	Reliability	Weight
	SQ1.1	SQ 1.1.4	Analyses are carried out to identify “zones at risk of not complying” with drinking water quality standards, and, if this is the case, appropriate actions are identified.	T.4	2
	PE1.2	PE 1.2.6	Consumption histories (daily per capita water consumption rate) exist by user type and consumption projections according to changes in income levels, water use technologies, demand management programs and other relevant factors are documented.	T.25	3

AR	Group	Practice	Description	Reliability	Weight
	PE1.2	PE 1.2.7	Daily and hourly consumption coefficients, average annual and maximum volumes, infiltration rates and others are documented and supported by empirical information based on specific studies.	T.25	3
	PE4.1	PE 4.1.2	A vulnerability analysis exists specifying the “system” elements potentially most affected.	T.37	2
	OE1.1	OE 1.1.2	Water flow rate or volume-metering devices are installed at all “entry points to the water supply system” and these are read and the data recorded at least once an hour.	T.1	1
	ES2.2	SA2.2.8	In the area influenced by management of the drinking water and/or wastewater “system” to be rated, “bodies of water” and ecosystems linked to them are classified on the basis of ecosystem quality and value in terms of biodiversity, singular species, area of high environmental value, etc.	T.2	1
	CC1.3	CC1.3.1	The company develops, individually or in collaboration, initiatives or studies that update knowledge about changes in temperature and the conditions that potentially impact their provision of services.	T.206	4
	CC1.3	CC1.3.2	The company develops, individually or in collaboration, initiatives or studies to update knowledge regarding changes in water demand and use in response to climate change scenarios that could potentially impact their provision of services.	T.206	4
	CC1.3	CC1.3.3	The company develops, individually or in collaboration, initiatives or studies to update knowledge regarding changes in energy use patterns that may reflect or influence climate change within the company’s area of responsibility or service provision.	T.206	4
	CC1.3	CC1.3.4	The company develops, individually or in collaboration, initiatives or studies to update knowledge regarding changes in seasonal precipitation patterns and in superficial flow patterns, particularly during periods of low precipitation, which might affect its provision of services.	T.206	4

AR	Group	Practice	Description	Reliability	Weight
+	CC1.3	CC1.3.5	The company develops, individually or in collaboration, initiatives or studies to update knowledge about changes in the frequency and intensity of extreme precipitation that may cause floods and can affect provision of services.	T.206	4
+	CC1.3	CC1.3.6	The company develops, individually or in collaboration, initiatives or studies to update knowledge about changes in groundwater that might impact its provision of services.	T.206	4
+	CC1.3	CC1.3.7	The company develops, individually or in collaboration, studies to update knowledge about the conditions of watersheds, water catchment systems, and/or raw water quality as they are potentially impacted by climate change and/or as they may impact the provision of services.	T.206	4
+	CC1.3	CC1.3.8	The company develops, individually or in collaboration, studies regarding new analytical methods for the identification, planning, and management of activities that contribute to the adaptation to and mitigation of climate change.	T.206	3

CC1.3.1

It is valid if there is evidence within the past five calendar years that the utility has undertaken, whether individually or in collaboration, studies that address the improvement or updating of knowledge about climate-related changes regarding temperature within the company's area of responsibility or in the entire area that affects, or might affect, the provision of services for which it is responsible. Studies conducted entirely by third parties will also be considered valid if they have been financed completely or in part by the company.

CC1.3.2

It is valid if there is evidence within the past five calendar years that the utility has undertaken, whether individually or in collaboration, studies that address the improvement or updating of knowledge regarding those aspects of climate change that are linked to supply and demand of water within the company's area of responsibility or in the entire area that affects, or might affect, the provision of services for which it is responsible. Studies conducted entirely by third parties will also be considered valid if they have been financed completely or in part by the company.

CC1.3.3

It is valid if there is evidence within the past five calendar years that the company has undertaken, whether individually or in collaboration, studies that address the improvement or updating of knowledge regarding those aspects of climate change that are linked to energy consumption within the company's area of responsibility or in the entire area that affects, or might affect, the provision of services for which it is responsible. Studies conducted entirely by third parties will also be considered valid if they have been financed completely or in part by the company.

CC1.3.4

It is valid if there is evidence within the past five calendar years that the company has undertaken, whether individually or in collaboration, studies that address the improvement or updating of knowledge regarding those aspects of climate change that are linked to periods and spells of low rainfall, surface flows, and droughts within the company's area of responsibility or in the entire area that affects, or might affect, the provision of services for which it is responsible. Studies conducted entirely by third parties will also be considered valid if they have been financed completely or in part by the company.

CC1.3.5

It is valid if there is evidence within the past five calendar years that the company has undertaken, whether individually or in collaboration, studies that address the improvement or updating of knowledge regarding those aspects of climate change that are linked to periods of high intensity of precipitation or flooding within the company's area of responsibility or in the entire area that affects, or might affect, the provision of services for which it is responsible. Studies conducted entirely by third parties will also be considered valid if they have been financed completely or in part by the company.

CC1.3.6

It is valid if there is evidence within the past five calendar years that the company has undertaken, whether individually or in collaboration, studies that address the improvement or updating of knowledge regarding those aspects of climate change that are linked to variations in groundwater availability within the company's area of responsibility or in the entire area that affects, or might affect, the provision of services for which it is responsible. Studies conducted entirely by third parties will also be considered valid if they have been financed completely or in part by the company. In the event that the company does not use groundwater, it will be considered that the practice is not followed.

CC1.3.7

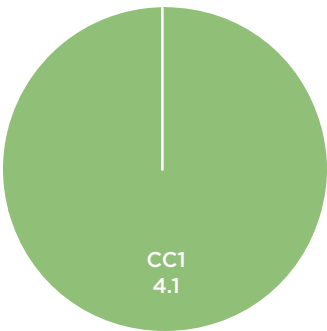
It is valid if there is evidence within the past five calendar years that the company has undertaken, whether individually or in collaboration, studies that address the improvement or updating of knowledge regarding those aspects of climate change that are linked to the conditions of the watersheds, water catchment systems, or raw water quality within the company's area of responsibility or in the entire area that affects, or might affect, the provision of services for which it is responsible. Studies conducted entirely by third parties will also be considered valid if they have been financed completely or in part by the company.

CC1.3.8

It is valid if there is evidence within the past five calendar years that the company has undertaken, whether individually or in collaboration, studies or investigative projects regarding new methods for climate change mitigation and adaptation. Studies conducted entirely by third parties will also be considered valid if they have been financed completely or in part by the company.

CC1.4 Positioning with respect to service implications

This parameter assesses the degree to which the utility maintains its positioning vis-a-vis compliance planning policies and risks of non-compliance with service standards, setting goals related to climate change scenarios and commitments.



Type ————— Best Practices
Normalization ————— Weighted by practice

AR	Group	Practice	Description	Reliability	Weight
+	CC1.4	CC1.4.1	The company has a formal position regarding vulnerability to climate change and variability, and guarantees service provision within its scope of responsibility.	T.207	1

CC1.4.1

It is valid if there is evidence within the past three calendar years, of the company having established forward-looking commitments, goals, or expectations related to the guarantee of service provision within its scope of responsibility. This position should be accessible and in the public domain in the form of a document or on the company’s website. The position should have some type of quantifiable parameter relative to the risk of service disturbance in terms of frequencies and impacts. Among the threats to service that are considered, there must be some link to climate change scenarios that has been clearly identified.

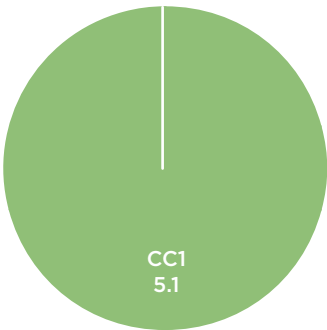


Foto: Belice

Focused Analysis: Climate change management in water and sanitation utilities

CC1.5 Climate change training for staff and management of uncertainty in water and sanitation service management

This parameter assesses the utility’s practices intended to provide adequate training to personnel to consider and prepare for changes that are occurring and will occur in the future as a consequence of climate change. This parameter also references risk management and uncertainty in general.



Type ————— Best Practices
Normalization ————— Weighted by practice

AR	Group	Practice	Description	Reliability	Weight
+	CC1.5	CC1.5.1	The company has employee training about climate change and about risk management and uncertainty.	T.208	1

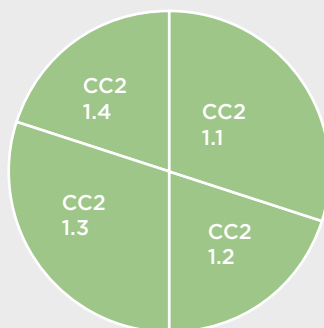
CC1.5.1

It is valid if there is evidence within the past three calendar years, of the implementation of employee training courses or programs related to management of uncertainty, risk, and climate change.

Commitments and practices for mitigating climate change impacts

CC2.1 Mitigation commitments

The characterization of the utility's commitments to climate change mitigation will be the result of the combined evaluation of the existing commitments that are established and disseminated throughout the company with respect to reducing parameters that contribute to climate change as a result of the company's processes and activities.



Type ————— Best Practices

Normalization — Weighted by practice

Glossary Terms → Greenhouse gases, renewable energies

AR	Group	Practice	Description	Reliability	Weight
+	CC2.1	CC2.1.1	The company has committed to reduce greenhouse gas emissions.	T.209	4
+	CC2.1	CC2.1.2	The company has committed to reduce global water consumption within its scope of responsibility.	T.209	3
+	CC2.1	CC2.1.3	The company has committed to reduce energy use and consumption within its scope of responsibility.	T.209	4
+	CC2.1	CC2.1.4	The company has committed to incrementally increase its use of renewable energies.	T.209	3

CC2.1.1

It is valid if there is evidence of a forward-looking commitment on the part of the company with respect to greenhouse gases, which are a direct contributor to climate change. The commitments must be made within a future horizon of less than five years; the plan must also be in the public domain and indicate the means for verifying its fulfillment.

CC2.1.2

It is valid if there is evidence of a forward-looking commitment on the part of the company with respect to the use and consumption of water within its scope of responsibility. It is only applicable when the company manages the supply or distribution of water. It is an indirect contributor to the mitigation of GG as a consequence of decreased water consumption. The reduction can be considered in absolute terms or relative to the recorded population in the service area. The commitments must be made within a future horizon of less than five years; the plan must also be in the public domain and indicate the means for verifying its fulfillment. It is valid regardless of the quantitative amount of the commitment.

CC2.1.3

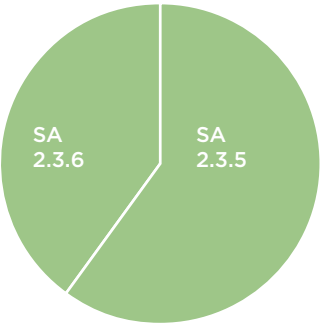
It is valid if there is evidence of a forward-looking commitment on the part of the company with respect to the use and consumption of energy within its scope of responsibility. It is an indirect contribution to mitigation as a result of a decreased use in any type of energy. The reduction can be considered in absolute terms or relative to the documented population or to another parameter that characterizes the service or production, within the scope of its responsibility. The commitments must be made within a future horizon of less than five years; the plan must also be in the public domain and indicate the means for verifying its fulfillment. It is valid independent of the quantity of the commitment.

CC2.1.4



It is valid if there is evidence of the company's forward-looking, quantitative commitment regarding the use of renewable energies within its scope of responsibility. It is an indirect contribution to mitigation as a consequence of decreasing fossil fuel energy use. This approach includes the commitment to improve the balance of energy linked to self-generation of energy within infrastructures of processes that comprise the system managed by the company. The commitment can be made in absolute terms or relative to the documented population or to another parameter that characterizes service or production within the company's scope of responsibility. The commitments must be made within a future horizon of less than five years; the plan must also be in the public domain and indicate the means for verifying its fulfillment. It is valid independent of the quantity of the commitment.

CC2.2 Practices and Processes

This parameter describes the practices and processes that contribute to mitigation policies by optimizing energy use and reducing total water consumption, which, in addition to reducing impacts on the aquatic environment, would lead to lower energy consumption as well.

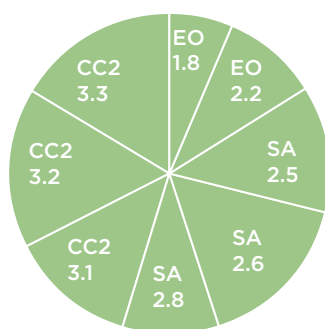


Type ————— Best Practices
Normalization — Weighted by practice
Glossary Terms → greenhouse gases, renewable energies

AR	Group	Practice	Description	Reliability	Weight
	ES2.3	ES 2.3.5	Energy efficiency improvement programs exist.	T.2	4
	ES2.3	ES 2.3.6	Water use efficiency and water demand management programs exist.	T.2	3

CC2.3 Progress parameters

The characterization of the progress parameters for climate change mitigation policies will be the result of the combined evaluation of parameters that quantify the impact of the company's policies, practices, and processes related to climate change. It attempts to assess greenhouse gas emissions and the energy balance in general.



Type ————— Indicators

Normalization — Specific to each indicator

Glossary Terms — Specific to each indicator

AR	Group	Indicator	Description	Reliability	Weight
	OE1.8	OE1.8	Reused water	T.41, T.46	2
	OE2.2	OE2.2	Energy use in reducing pollutant load	T.48, T.49	3
	ES2.5	ES2.5	Energy consumption balance	T.111, T.112	4
	ES2.6	ES2.6	Greenhouse gas emissions linked to drinking water and/or wastewater management	T.100, T.113	5
	ES2.8	ES2.8	Water resource use	T.100, T.109	3
	CC2.3	CC2.3.1	Reduction of use of unit water	T.41, T.100	4
	CC2.3	CC2.3.2	Reduction of greenhouse gas emissions	T.113	5
	CC2.3	CC2.3.3	Reduction of energy use and consumption	T.111	5

OE1.8 “Reused water”

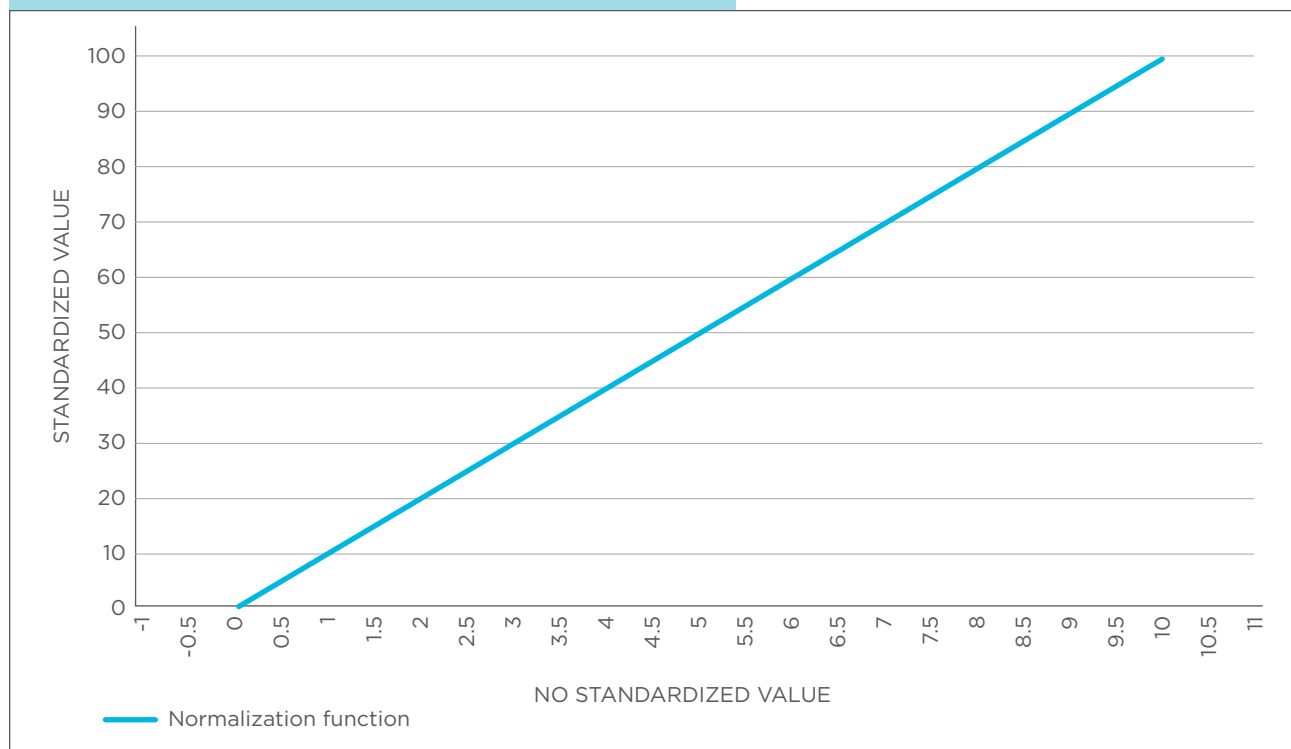
Assesses the degree of direct reuse of wastewater reclaimed in specific plants after treatment to comply with the quality requirements enabling the use for which it is destined. Only wastewater volumes reclaimed and reused in the geographical area served by the rated utility will be assessed. Wastewater volumes reclaimed (and reused) on private property (industrial, institutional or domestic) will not be considered. This indicator is included in this rating area as reclaimed water supply is not considered in the service quality area because it is not yet a widespread activity.

Optimal (efficient) reuse of water within each system depends on multiple factors, which would make assessment of the degree of reuse in each case highly complex. However, it is assumed that a certain level of reuse will always be indicative of efficient management of water resources.

It will be measured by comparing the known volumes of reclaimed water and the total “volumes introduced into the system” for treatment and distribution as fit for consumption.

Definition	Percentage of “reclaimed” water “reused” within the assessed utility’s “geographical area to be rated” as a proportion of total “water introduced into the system” for treatment and distribution for consumption in the year of rating.
Type	Indicator
Service	Drinking Water and/or Sanitation
Glossary	Water volume incorporated into the system, Reclaimed water, Reused water, Geographical area to be rated
Formula	$([EO1-V7]/[EO1-V2])*100$ Unit: %

Normalization Function



Variables

[EO1-V2] Total “water volume introduced into the system”

Definition — Total “water volume introduced into the system”

Units — m^3

Reliability — Table 41

[EO1-V7] Volume of “reclaimed water”

Definition — Volume of “reclaimed water” used within the “geographical area to be rated”.

Units — m^3

Reliability — Table 46

OE2.2 Energy use in reducing pollutant load

An indicator (energy use per unit of pollutant load reduced in wastewater treatment plants) is used to complement assessment of energy use in wastewater treatment processes. Energy consumption is not the only variable that determines efficiency in wastewater treatment processes, although it does generally have the most influence on the relationship between pollutant load inflow and the outflow load discharged into the natural environment after treatment. Therefore, it has been chosen as a representative assessment element with the potential to achieve consistent rating across the systems implemented.

Definition — Energy consumption of all wastewater treatment processes per kilogram of BOD5 pollutant load reduced between inflow and outflow. The average value for the year of rating will be used.

Type — Indicator

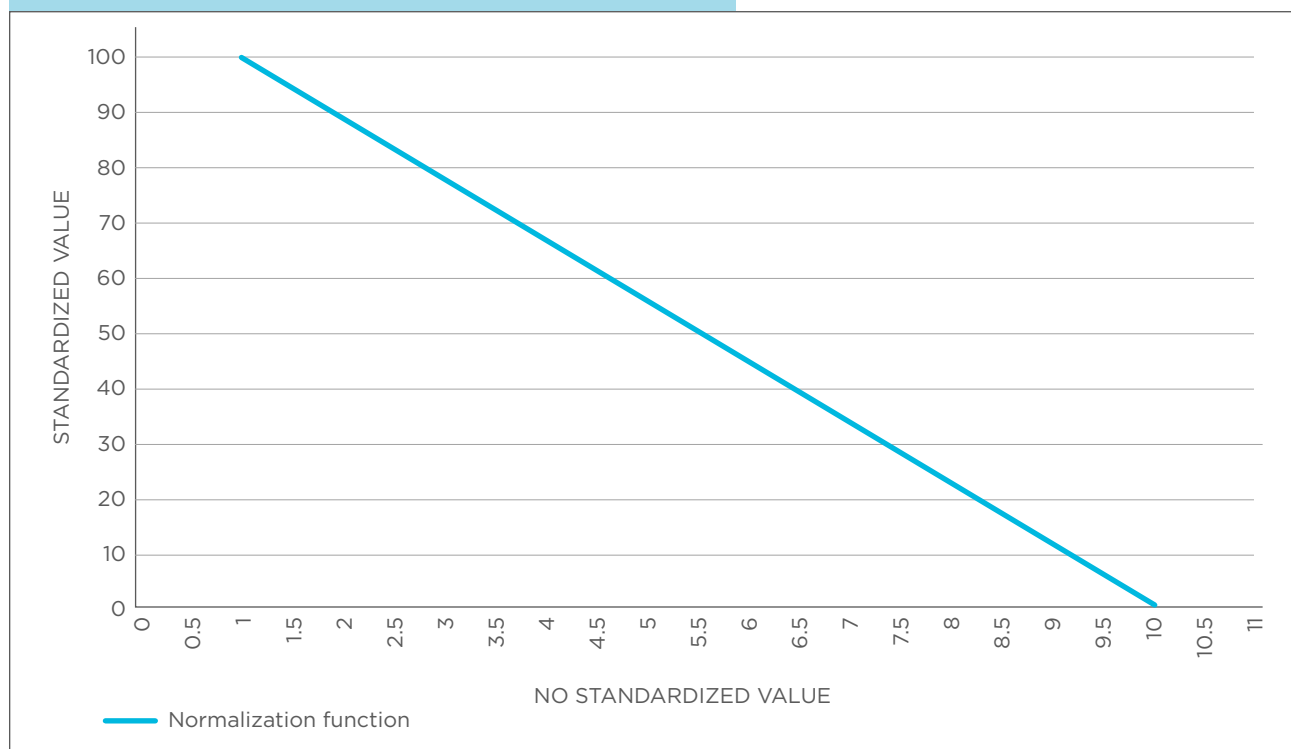
Service — Sanitation

Glossary —

Formula — $[EO2-V1]/[EO2-V2]$ Unit: kwh/kg BOD5



Normalization Function



Variables

[E02-V1] Total energy consumption in all operative wastewater treatment plants

Definition — Total energy consumption in all wastewater treatment plants operating throughout the reference year.

Units — kWh

Reliability — Table 48

[E02-V2] Difference in total annual BOD5 kilograms between inflows to wastewater treatment plants operating throughout the entire reference year and BOD5 kilograms in the corresponding outflows.

Definition — Difference in total annual BOD5 kilograms between inflows to wastewater treatment plants operating throughout the entire reference year and BOD5 kilograms in the corresponding outflows.

Units — kg BOD5

Reliability — Table 49

ES2.5 Energy consumption balance

This indicator considers, from an overall perspective, the impact that energy consumption has on the environment (regardless of its type or degree of usage efficiency). As energy consumption depends largely on context and degree of compliance with service and environmental standards, an assessment element that considers the balance between energy produced and energy used is applied, assuming that energy may be produced as part of water and wastewater service delivery. The degree of energy usage efficiency is included in the Operating Efficiency rating area.

Definition — Percentage representing the energy consumed in all drinking water and wastewater service processes as a proportion of the energy generated in all facilities linked to the “system”. The average annual value for the 2 years preceding the rating year is used.

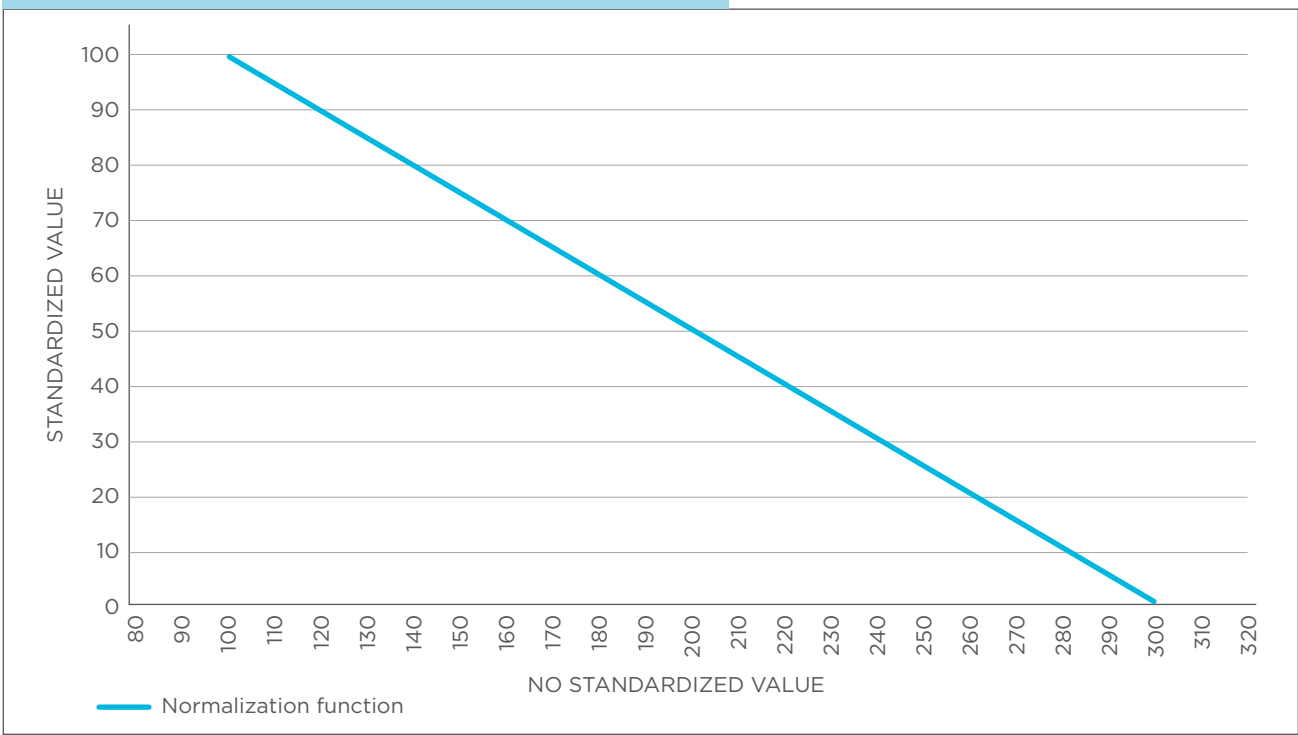
Type — Indicator

Service — Drinking Water and/or Sanitation

Glossary — System

Formula — $([SA-V3]/[SA-V4])*100$ Unit: %

Normalization Function



Variables

[SA-V3] Energy consumed by all drinking water and wastewater processes

Definition — Energy consumed by all drinking water and wastewater processes (average annual value for the year of rating and the 2 preceding years preceding the rating).

Units — Kwh

Reliability — Table 111

[SA-V4] Energy generated in facilities linked to the “system”

Definition — Energy generated in facilities linked to the “system” (average annual value for the last 3 years including the rating year).

Units — Kwh

Reliability — Table 112

ES2.6 Greenhouse gas emissions linked to drinking water and/or wastewater management

This indicator considers the environmental impact linked to greenhouse gas emissions. It is a variable that depends on the types of processes employed and rating scope. Nevertheless, this assessment element considers the potential environmental impact linked to the delivery of the rated service. In order to obtain more homogeneous values for this indicator, it is expressed as a proportion of the number of inhabitants served.

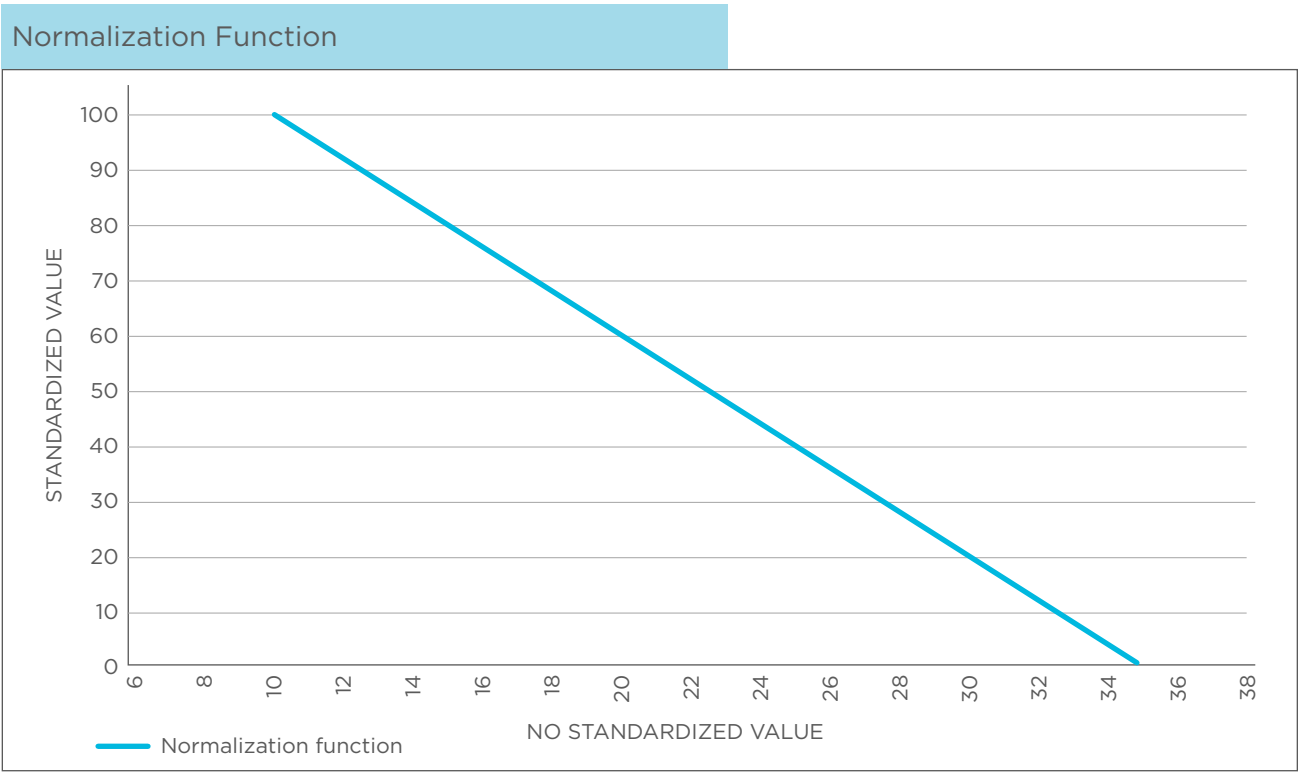
Definition — Annual tons of CO2 equivalent emitted per 1,000 inhabitants served

Type — Indicator

Service — Drinking Water and/or Sanitation

Glossary — Geographical area to be rated

Formula — $([SA-V5]/[SA-V15])*1000$ Unit: Tons/1000 population



Variables

[SA-V15] Population served in the “geographical area to be rated”

- Definition** — Number of inhabitants receiving any of the services being rated in the “geographical area to be rated” at the end of the rating year.
- Units** — inhabitants
- Reliability** — Table 100

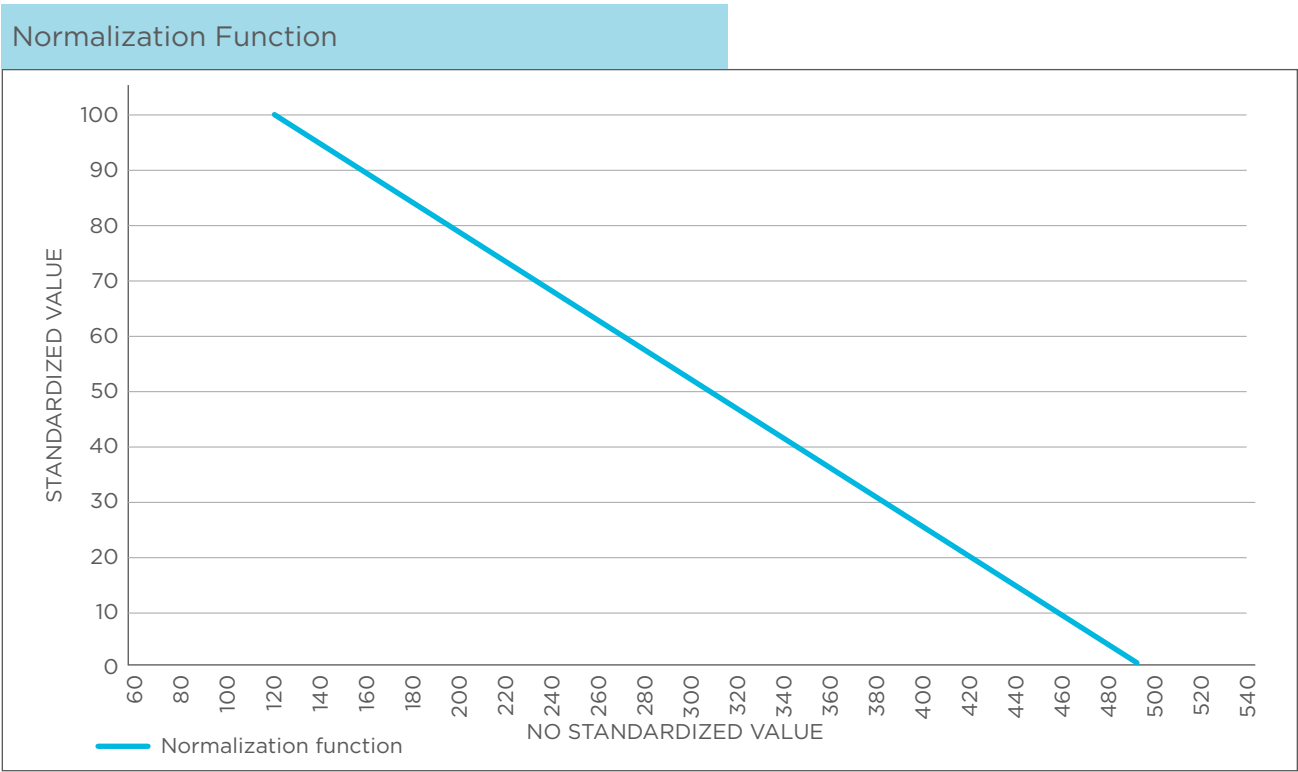
[SA-V5] Annual emission of CO2 equivalent

- Definition** — Annual emission of CO2 equivalent in the year of rating.
- Units** — tons
- Reliability** — Table 113

ES2.8 Water resource use

This assessment element considers the degree of environmental modification produced by unitary consumption of water resources. It is an indicator that depends greatly on contextual factors such as local climate, water use culture and commercial and industrial activity type and intensity in the rating area. Nevertheless, it is an indicator that enables evaluation of this set of factors in relation to water volume used as a proportion of the population served in the geographical area rated. It would not be defensible as an efficiency indicator because of the influence of all the contextual elements. However, as an environmental assessment element, it enables evaluation of the degree of impact produced by activities in the zone and by usage and consumption habits.

Definition	Water volume per inhabitant and day withdrawn from the natural environment for water supply (average of the year of rating with the 2 preceding years).
Type	Indicator
Service	Drinking Water
Glossary	Geographical area to be rated
Formula	$([SA-V8]/[CS1-V2])$ Unit: l/hab day



Variables

[CS1-V2] Population with a household connection in the “geographical area to be rated” for drinking water supply.

- Definition** — Population with a household connection in the “geographical area to be rated” for drinking water supply (at the end of the rating year).
- Units** — inhabitants
- Reliability** — Table 100

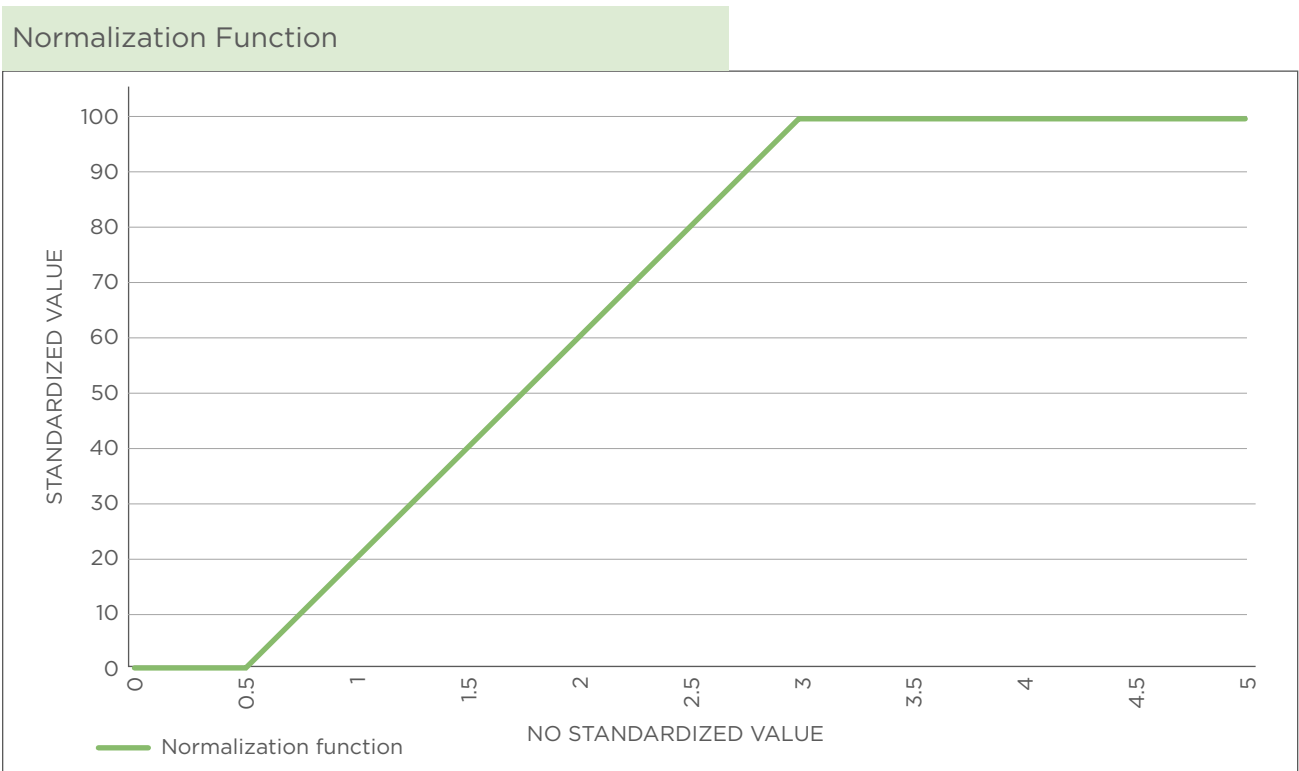
[SA-V8] Water volume withdrawn from the natural environment for water supply (daily)

- Definition** — Water volume withdrawn from the natural environment for water supply (daily)
- Units** — liters
- Reliability** — Table 109

CC2.3.1 Reduction of use of unit water

Evaluates the results of the effort and policies to reduce the use and consumption of water in the entire system managed by the utility. It quantifies the percentage of reduction in total consumption within the system per inhabitant who is supplied, within the previous three calendar years. It is only applicable when the company manages the supply or distribution of water. If there is no information for both periods, a value of 0 will be applied for the indicator.

Definition	Percentage of reduction of use of unit water in the three preceding calendar years.
Type	Indicator
Service	Potable Water
Formula	$\left[\frac{[(EO1-V2)/(CS1-V2)] - [(CC2-V1)/(CC2-V2)]}{(CS1-V2)} \right] * 100$ Unit: Percentage



Variables

[EO1-V2] “Volumen total de agua incorporada al sistema”

Definition — Total “water volume introduced into the system”

Units — m^3

Reliability — Table 41

[CS1-V2] Population with a household connection in the “geographical area to be rated” for drinking water supply.

Definition — Population with a household connection in the “geographical area to be rated” for drinking water supply (at the end of the rating year).

Units — inhabitants

Reliability — Table 100

[CC2-V1] Total volume of water incorporated into the system in the third calendar year prior to the assessment date (m^3).

Definition — The total volume of water incorporated into the system is accounted for throughout the entire year, whether it is water captured from the natural environment or imported from another supply system. The reclaimed water used by the system will not be counted.

Units — m^3

Reliability — Table 41

[CC2-V2] Population with connection to the supply and distribution system at the end of the third calendar year prior to the assessment date (population).

Definition — Inhabitants with connection to the supply and distribution system are counted at the end of the third calendar year prior to the assessment.

Units — inhabitants

Reliability — Table 100

CC2.3.2 Reduction of greenhouse gas emissions

Evaluates the result of the efforts and policies to reduce greenhouse gas emissions in the entire system managed by the company. It quantifies the percentage of reduction in greenhouse gas emissions within the preceding three calendar years. If there is no information for both periods, the indicator will be considered with a value of 0.

Definition — Percentage of reduction of greenhouse gas emissions in the three preceding calendar years.

Type — Indicator

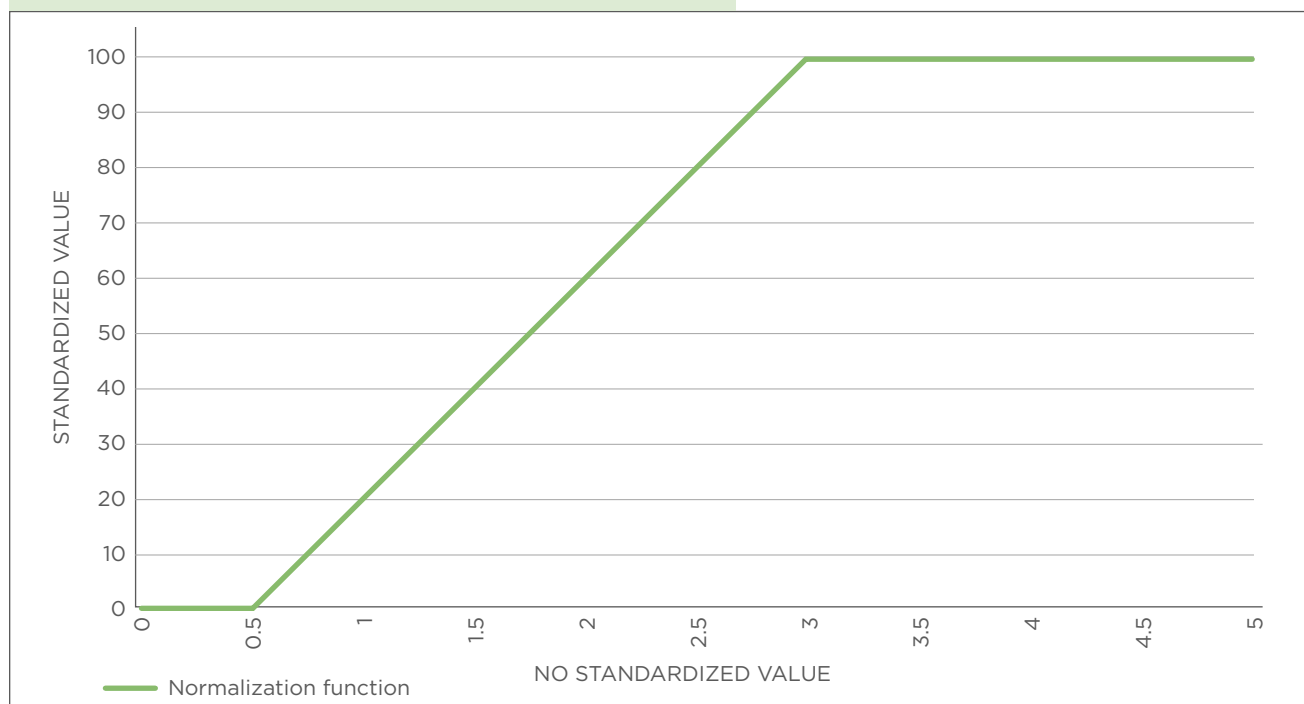
Service — Potable water and/or Sanitation

Glossary — greenhouse gases

Formula —
$$\left[\frac{[(SA-V5)] - (CC2-V3)]}{(CC2-V3)} \right] * 100$$

Unit: Percentage

Normalization Function



Variables

[SA-V5] Annual emission of CO2 equivalent

Definition — Annual emission of CO2 equivalent in the year of rating.

Units — tons

Reliability — Table 113

[CC2-V3] Annual CO2 emission equivalent in the third calendar year prior to the assessment date

Definition — The annual emission of greenhouse gases is counted, measured as tons of CO2 equivalent, during the third calendar year prior to the date of assessment.

Units — Tons

Reliability — Table 113

CC2.3.3 Reduction of energy use and consumption

Evaluates the result of the efforts and policies to reduce energy use and consumption in the entire system managed by the company. Quantifies the percentage of energy use reduction in the preceding three calendar years. All energy consumed in the company's systems will be considered, regardless of whether it is produced by the company itself. If there is no information for both periods, the value of 0 will be applied as the indicator.

Definition — Percentage of reduction of energy use and consumption in the preceding three calendar years.

Type — Indicator

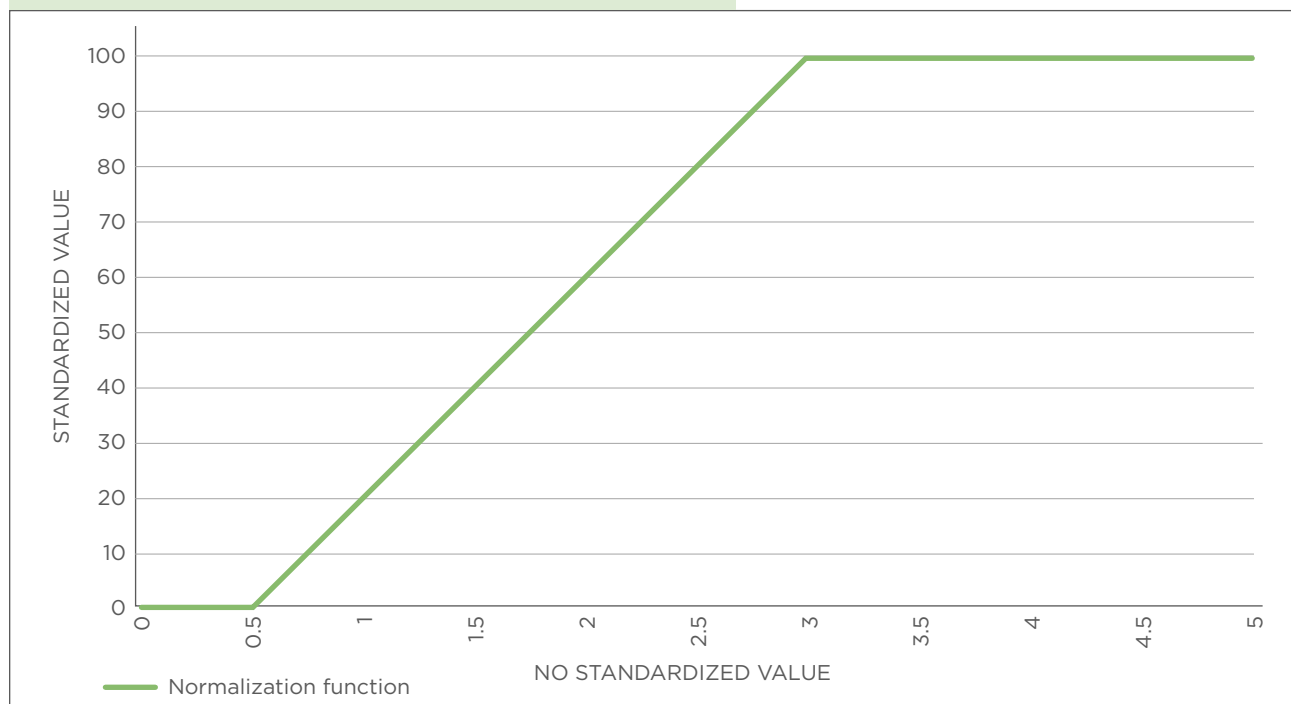
Service — Potable water and/or Sanitation

Glossary —

Formula —
$$\frac{[(CC2-V5)] - (CC2-V4)]}{(CC2-V5)} \times 100$$

Unit: Percentage

Normalization Function



Variables

[CC2-V4] Energy consumed in all of the processes of providing water and sanitation service in the third calendar year prior to the date of assessment

Definition — Energy consumption is recorded in all company processes related to water and sludge management during the third calendar year prior to the date of assessment.

Units — kwh

Reliability — Table 111

[CC2-V5] Energy consumed in all the processes of water and sanitation services in the calendar year prior to the assessment date.

Definition — Energy consumption is recorded for all company processes related to water and sludge management during the calendar year prior to the assessment date.

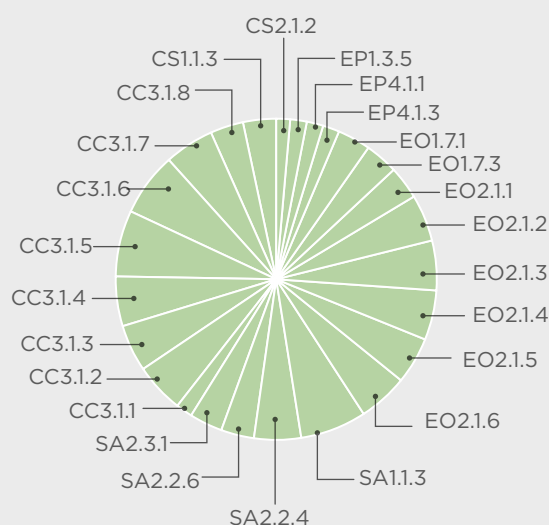
Units — kwh

Reliability — Table 111









Commitments and practices related to policies for adapting to climate change impacts










CC3.1 Planning policies

The characterization of planning practices and techniques focused on climate change adaptation will be the result of the combined evaluation of the planning procedures, practices, and techniques in terms of their approach and ability to adapt to possible scenarios and episodes resulting from climate change.



Type —————→ Best Practices
Normalization ———→ Weighted by practice

AR	Group	Practice	Description	Reliability	Weight
	SQ1.1	SQ1.1.3	Alternative “treatment” facilities exist to provide drinking water in hydraulically independent zones with populations of over 100,000 inhabitants. At least 50% of the population of such zones will have more than one source of drinking water. In “systems” in which these circumstances do not apply, this practice is considered complied with at maximum reliability level.	T. 8	1
	SQ2.1	SQ2.1.2	Water supply and distribution infrastructure design is conceived to minimize impact due to “contingencies” and to comply with service standards.	T. 2	1
	PE1.3	PE1.3.5	Possible solutions are subject to assessment of alternatives that takes into consideration life cycle assessment (LCA), CO2 emissions, environmental sustainability and mitigation of other externalities.	T. 25	1
	PE4.1	PE4.1.1	An analysis exists detailing the main risks the utility faces, including the corresponding probability of occurrence.	T.37	1
	PE4.1	PE4.1.3	Mitigation measures to reduce “system” vulnerability have been identified and implemented and are incorporated in the investment plan.	T. 38	2
	OE1.7	OE1.7.1	A plan is in force for direct reuse of wastewater.	T. 2	2
	OE1.7	OE1.7.3	Incentivization measures are applied to promote the use of “reclaimed water” in the public and private spheres.	T. 2	2
	OE2.1	OE2.1.1	Energy audits that include all energy-consuming facilities in the “system” are carried out at least once every five years.	T. 47	3

AR	Group	Practice	Description	Reliability	Weight
	OE2.1	OE2.1.2	Measures and recommendations proposed in energy audits are implemented, at least in facilities that account for 90% of total recommendations as measured by energy consumption.	T. 47	3
	OE2.1	OE2.1.3	Plans exist for optimizing energy consumption in operation of drinking water supply, treatment, and distribution “systems” and in operation of wastewater collection and treatment systems.	T. 2	3
	OE2.1	OE2.1.4	Energy optimization is considered during the infrastructure and equipment design phase.	T. 2	3
	OE2.1	OE2.1.5	Energy optimization is considered when planning operation of facilities and of the “system” as a whole.	T. 2	3
	OE2.1	OE2.1.6	A plan exists for improving and reducing unit energy consumption and includes annual objectives and monitoring of objective fulfilment.	T. 2	4
	ES1.1	ES1.1.3	Stormwater tanks exist to buffer peak pollutant flows from the urban drainage system and these tanks are equipped with a system to manage treatment of the volumes of stormwater stored in the wastewater treatment plants.	T. 3	3
	ES2.2	ES2.2.4	Environmental and social costs are considered in assessment of all alternatives (initiatives, projects and works) planned or in planned operation.	T. 2	2
	ES2.2	ES2.2.6	Individual or collective “recycling” systems and use of non-conventional water sources are promoted or financed, provided their efficiency is substantiated.	T. 2	2
	ES2.3	ES2.3.1	Environmental and social impacts and hazards are assessed for all works and projects subject to such assessment under applicable legislation.	T. 2	1

AR	Group	Practice	Description	Reliability	Weight
+	CC3.1	CC3.1.1	The company has a planning policy to ensure the availability of water resources in facing climate change scenarios where water demand and water resource availability have been quantified explicitly.	T. 210	3
+	CC3.1	CC3.1.2	The company has policies for the integrated use of water resources, with specific reference to ensuring supply or climate resilience.	T.211	3
+	CC3.1	CC3.1.3	The company has policies for adaptive assurance of the capacity and redundancy of its infrastructure to face climate change.	T. 211	3
+	CC3.1	CC3.1.4	The company has policies and initiatives for the protection and reduction of climate change impacts, and prepares threat and risk maps related to climate change.	T. 212	4
+	CC3.1	CC3.1.5	The company has policies and initiatives to reduce risks associated with the observed and anticipated impacts of climate change that are linked to episodes of extreme rainfall, and it prepares risk maps for the population, economic activities, and the aquatic environment.	T. 212	4
+	CC3.1	CC3.1.6	The company has operational planning practices in place that include climate change scenarios.	T.213	3
+	CC3.1	CC3.1.7	The company has preventive maintenance practices with an explicit focus on equipment and contingency scenarios.	T.213	2
+	CC3.1	CC3.1.8	The company has a policy that addresses compensation for damages and losses associated with contingencies.	T.214	2

CC3.1.1

It is valid if there is evidence of a supply planning exercise in which quantified, legitimate climate change scenarios are used to analyze availability and ensure supply. It will not be applicable to companies that do not have responsibility for water supply services.

CC3.1.2

It is valid if there is evidence of a supply planning exercise in which there exist initiatives for the integrated use of different types of resources (such as the reserve of strategic resources in the event of shortages, emergency resources, contracts for water rights trading or markets, artificial aquifer recharging, or increased reuse of wastewater) for improved adaptation to the observed and anticipated impacts of climate change, including changes in episodes of drought or scarcity, which have been quantified and justified. It will not apply to companies that do not have responsibility for water supply services.

CC3.1.3

It is valid if there is evidence of application, in investment planning exercise or infrastructure design, of criteria, methods, or procedures that justifiably consider climate change scenarios and which conclude with the development of redundancy or adaptive solutions to face such scenarios.

CC3.1.4

It is valid if there is evidence of the existence and implementation of policies for the prevention and reduction of impacts that would be caused from scarcity scenarios provoked by climate change. There must also be risk maps for potential impacts of climate change. The risk maps must have been updated within the past five years and must take into account both the impacts on the population served, as well as the impacts on economic activities and on the aquatic environment within the company's sphere of influence or responsibility. The climate change scenarios referenced in the policies must be quantified and justified.

CC3.1.5

It is valid if there is evidence of the existence and implementation of policies for the prevention and reduction of impacts of climate change scenarios in which there are extreme precipitation episodes. There must also be risk maps for potential impacts of climate change. An example of these policies is the promotion of the implementation of sustainable urban drainage systems and green infrastructure generally. The risk maps must have been updated within the past five years, and must take into account both the impacts on the population served, as well as the

impacts on economic activities and on the aquatic environment within the company's sphere of influence or responsibility. The climate change scenarios referenced in the policies must be quantified and justified.

CC3.1.6

It is valid if there exists evidence from within the past three calendar years, of the application of operational planning practices in which probable scenarios linked to climate change are analyzed frequently (at least monthly) and that system operations are based on these scenarios and hypotheses.

CC3.1.7

It is valid if there is evidence from within the past three calendar years, of the application of preventive maintenance practices on equipment or facilities that will only be used in the event of contingencies; these might include, for instance, drought wells or deep drains in dams or plants. This practice does not require an explicit mention of climate change scenarios, but does contribute in an explicit way to planning for them.

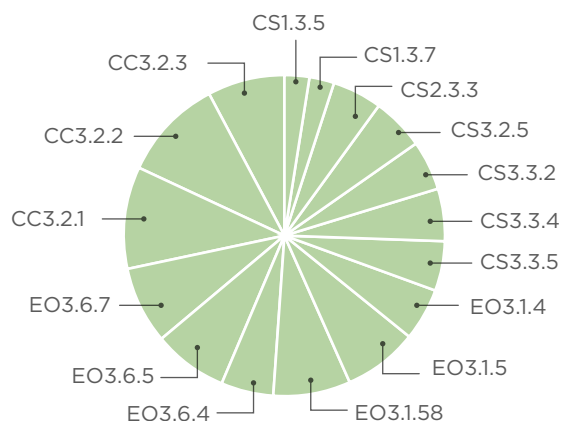
CC3.1.8

It is valid if there exists evidence from within the past five calendar years, of the existence or application of compensation policies for damages and losses linked to contingencies. This practice does not require an explicit mention of climate change scenarios, but does contribute in an explicit way to planning for them.



CC3.2 Operational Policies






The characterization of the operational practices and techniques focused on climate change adaptation will be the result of the combined evaluation of the operating procedures, practices, and techniques of the systems and infrastructures in terms of their approach to adapting to potential scenarios and episodes caused by climate change.












Type ————— Best Practices

Normalization ————— Weighted by practice

Glossary Terms – corrective maintenance, systems, in real time

AR	Group	Practice	Description	Reliability	Weight
	SQ1.3	SQ1.3.5	Alarm thresholds exist for “corrective maintenance” and operation adjustment.	T. 2	1
	SQ1.3	SQ1.3.7	Automatic water quality monitoring stations are available (in at least 50% of the zone supplied) at the outlets of the treatment plants or tanks.	T. 1	1
	SQ2.3	SQ2.3.3	Early warning mechanisms are available 24/7 (remote control and receipt of warnings referring to supply and distribution “systems”).	T. 3	2
	SQ3.2	SQ3.2.5	A service is available 24 hours a day to manage anomalies in the wastewater collection network.	T. 5	2
	SQ3.3	SQ3.3.2	A “real-time” telemetry system is available to manage the wastewater collection network.	T. 3	2

AR	Group	Practice	Description	Reliability	Weight
	SQ3.3	SQ3.3.4	Flow-regulating elements (e.g. remotely controlled gates) exist in the collector mains or wastewater collection network.	T. 1	2
	SQ3.3	SQ3.3.5	Systems exist to support decision-making in regular and exceptional operation of the drainage or wastewater collection network.	T. 3	2
	OE3.1	OE3.1.4	A remote control system exists that relays the operational status of at least 20% of maneuverable devices and equipment positioned in strategic parts of the “system”.	T. 3	2
	OE3.1	OE3.1.5	An early warning system exists to identify “incidents” (remote control, sectoring, online indicators).	T. 3	3
	OE3.1	OE3.1.8	An integrated system exists to manage anomaly reporting and resolution linked to the operation and warnings and complaints areas.	T. 3	3
	OE3.6	OE3.6.4	A remote control or equivalent online system exists to relay the operational status of maneuverable devices and equipment in the wastewater or drainage network. (In “systems” with networks that do not include maneuverable devices or equipment, this practice is considered complied with at maximum reliability level).	T. 3	2
	OE3.6	OE3.6.5	An early warning system exists to identify “incidents” (remote control, sectoring, online indicators).	T. 3	3
	OE3.6	OE3.6.7	An integrated system exists to manage anomaly reporting and resolution linked to the operation and warnings and complaints areas.	T. 3	3
	CC3.2	CC3.2.1	The company has procedures or systems that allow it to make predictions that will anticipate episodes that could pose a risk to the population, services, or the aquatic environment in which it has influence	T. 215	4

AR	Group	Practice	Description	Reliability	Weight
+	CC3.2	CC3.2.2	The company has equipment and installations to monitor and detect and provide early alerts about risk scenarios that would affect service	T. 216	4
+	CC3.2	CC3.2.3	The company has support systems for making decisions for the prevention and management of risks in the operation of systems within its scope of responsibility	T. 216	3

CC3.2.1

It is valid if there is evidence of the existence and use of systems or procedures that allow the company to predict and anticipate probable episodes that could pose a risk to the population, services, or the aquatic environment. The company's own systems, such as radars or satellite technologies, will be valid, as will formal agreements with entities that make these predictions.

CC3.2.2

It is valid if there is evidence of the existence and use of said equipment and instruments, as well as the facilities that allow management of the alerts and alarms that may be generated. This practice does not require an explicit mention of climate change scenarios, but it makes an explicit contribution to their operation.

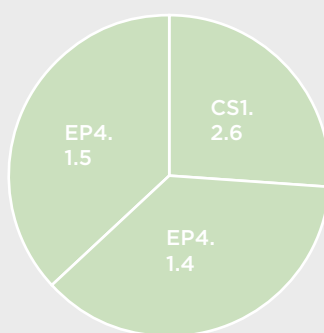
CC3.2.3

It is valid if there is evidence of the existence and use of said systems, as well as of the facilities that allow them to be managed and operated in alert situations and in contingencies. This practice does not require an explicit mention of climate change scenarios, but it makes an explicit contribution to their operation.




Specific policies for contingency management and resilience

CC4.1 Management procedures and protocols in the face of climate change

This parameter describes the availability of updated, applicable plans for contingencies that will undoubtedly have a greater probability of occurring as a result of climate change, as more systems are stressed and more severe episodes occur than have been known and confronted previously.

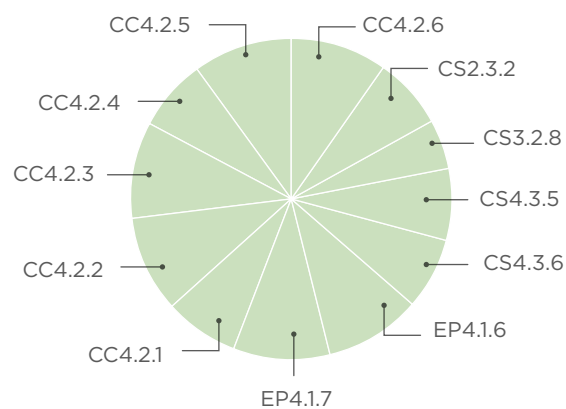


Type ————— Best Practices
Normalization ————— Weighted by practice

AR	Group	Practice	Description	Reliability	Weight
 Q	SQ1.2	SQ1.2.6	Safety plans exist for “contingencies” regarding water quality.	T. 2	3
 Q	PE4.1	PE4.1.4	An “emergency” plan exists identifying the entities responsible for issuing alerts and staff have been assigned to monitor them.	T. 37	4
 Q	PE4.1	PE4.1.5	An “emergency” plan exists that includes an incident command group and prior coordination agreements with other entities, and identifies users assigned high priority for service restoration.	T. 37	4

CC4.2 Operational policies

This parameter describes the availability of operational practices and techniques that reinforce the company’s capacity to confront the changes in usual contexts and conditions that will occur as the result of climate change. This parameter acknowledges that modifications may be more gradual than sudden.



Type ————— Best Practices

Normalization ————— Weighted by practice

Glossary Terms — contingency, system, insurance of risk transfer policies

AR	Group	Practice	Description	Reliability	Weight
	SQ2.3	SQ2.3.1	Specific human and material resources are available 24/7 to manage “contingencies” in water supply and distribution “systems”.	T. 5	4
	SQ2.3	SQ2.3.2	GIS tools are available to support isolation, repair and resolution of “contingencies” in supply and distribution “systems”.	T. 3	3
	SQ3.2	SQ3.2.8	A computerized system for recording and managing anomalies in the wastewater collection “system” is available.	T. 3	2
	SQ4.3	SQ4.3.5	Users are informed about progress and expected resolution of unforeseen “contingencies” (e.g. by means of automated calls or text messages to users’ phones, automated responses from the utility’s user service line, website, etc.).	T. 2	3
	SQ4.3	SQ4.3.6	Critical users (hospitals, schools, high-volume consumers, etc.) are identified and a special procedure is in place to provide them with timely information about interruptions, expected service impact and progress and expected resolution of unforeseen “contingencies”.	T. 2	3
	PE4.1	PE4.1.6	The “emergency” plan is comprehensively updated in the wake of the last event that affected the utility, following modifications of conditioning factors, or is validated with pre-established regularity.	T. 37	4
	PE4.1	PE4.1.7	The “emergency” plan has been widely communicated to staff, who are trained to implement it.	T. 4	4
	CC4.2	CC4.2.1	The company has a classification of possible and probable scenarios linked to climate change.	T.217	3
	CC4.2	CC4.2.2	The company has a classification and quantification system related to resilience in the face of climate change.	T.218	4

AR	Group	Practice	Description	Reliability	Weight
+	CC4.2	CC4.2.3	The company has funds that are earmarked specifically for facing contingencies.	T.219	4
+	CC4.2	CC4.2.4	The company has insurance or risk transfer policies, including contingencies related to hydrometeorological threats exacerbated by climate change.	T.220	3
+	CC4.2	CC4.2.5	The company conducts or participates in, simulations for contingency episodes and team training exercises with lessons learned from management of prior contingency episodes.	T.221	4
+	CC4.2	CC4.2.6	The company uses public participation procedures to establish resilience and policies for the management of and communication about, as well as the handling of damages and losses caused by, contingency situations.	T.222	3

CC4.2.1

It is valid if there is documented evidence of the recognition, classification, and application of likely scenarios or episodes linked to climate change.

CC4.2.2

It is valid if there is documented evidence of the classification and quantification of the company's resilience objective in relationship to episodes and contingencies related to climate change. The objective quantification of resilience must establish the impact and duration of each type of episode, accounting for its severity and probability of occurrence. From this foundation, management plans for contingencies and investment needs and actions prior to the contingency can be formulated, along with amounts established for each.

CC4.2.3

It is valid if there is documented evidence of financial planning with respect to the reserve, and the allocation of specific funds for managing contingency situations, including those related to climate change-related scenarios, such as periods of drought, scarcity, or floods.

CC4.2.4

It is valid if there is documented evidence of the existence of insurance or risk transfer policies that entirely or partially cover costs, damages, or losses sustained from the occurrence of climate change-related contingencies.

CC4.2.5

It is valid if there is documented evidence in the form of reports, acts, or assessment documents, that substantiate the implementation of or participation in simulations of trainings specifically with the purpose of analyzing past episodes, for the management of contingencies that can be related to climate change.

CC4.2.6

It is valid if there is documented evidence of the application of practices for public participation, in the establishment of amounts of resilience, or the policies to confront and manage impacts caused by climate change-related contingencies.

Appendix

A. Reliability tables that are included in the AquaRating evaluation tool

Table 1

Reliability Levels		Factor
1	Existence of equipment cannot be verified.	0
2	Equipment exists physically, it can be verified that it has the indicated characteristics and that the rated utility is authorized to use it (property, invoice, delivery note, rent receipt or other evidence).	0.6
3	In addition to fulfilling the requirements for level 2, operation manuals and personnel trained to use and maintain the equipment exist.	0.7
4	In addition to fulfilling the requirements for levels 2 and 3, calibration of at least 60% of the equipment is certified (by an accredited laboratory in the case of equipment for measuring physical and chemical parameters) and accuracy is systematically verified.	0.8
5	In addition to fulfilling the requirements for levels 2, 3 and 5, it is part of the instrumentation audited, at least internally, according to an accreditation standard.	0.95
6	Además de cumplir con los requisitos de los niveles 2, 3 y 5, forma parte de la instrumentación auditada al menos internamente según alguna norma de acreditación.	1

Table 2

Reliability Levels		Factor
1	The practice is not documented.	0
2	The practice is documented, but there is no evidence of its application either in the rating year.	0.5
3	The practice is documented and evidence exists of its application in the rating year.	0.7
4	The practice is documented, and evidence exists of its application at the rating year as well as in the calendar year preceding that date.	1

Table 3:

Reliability Levels		Suma
1	Documents describing the system exist, as do handbooks for its use and maintenance.	0.25
2	Staff are available to use and maintain it.	0.25
3	It is permanently installed on all relevant workstations or can be accessed from them.	0.25
4	Records of its systematic use exist.	0.25

Table 4

Reliability Levels		Factor
1	There is no evidence of its application.	0
2	Evidence exists of its application at the year of rating or the calendar year preceding that date.	0.7
3	Evidence exists of its application at year of rating as well as in the calendar year preceding that date or in the 2 calendar years preceding the year of rating.	1

Table 5:

Reliability Levels		Factor
1	There is no evidence of its application.	0
2	Evidence exists of its application in the year of rating.	0.7
3	Evidence exists of its application in the rating year.	0.8
4	Evidence exists of its application in the rating year as well as in the calendar year preceding that date.	0.9
5	Evidence exists of its application in the year of rating as well as in the 2 calendar years preceding that date.	1

Table 25

Reliability Levels		Factor
1	No documentation exists.	0
2	Existing documentation was approved more than 5 years ago.	0.5
3	Existing documentation was approved less than 5 years ago.	1

Table 37

Reliability Levels		Factor
1	The practice is not documented or it was reviewed and/or updated more than 3 years ago.	0
2	The practice is documented and there is evidence that it was reviewed and/or updated two years before the year of rating.	0.5
3	The practice is documented and there is evidence that it was reviewed and/or updated one year before the year of rating.	0.7
4	The practice is documented and there is evidence that it was reviewed and/or updated at the rating date or in the year of rating.	0.9
5	The practice is documented and there is evidence that it was reviewed and/or updated at the rating date, in the year of rating and the year preceding the year of rating.	1

Table 38

Reliability Levels		Factor
1	The practice is not documented or it was reviewed and/or updated more than 3 years ago.	0
2	The practice is documented and there is evidence that it was reviewed and/or updated two years before the year of rating.	0.5
3	The practice is documented and there is evidence that it was reviewed and/or updated and implemented or incorporated into the investment plan, if applicable, one year before the year of rating	0.7
4	The practice is documented and there is evidence that it was reviewed and/or updated and implemented or incorporated into the investment plan, if applicable, in the year of rating.	0.9
5	The practice is documented and there is evidence that it was reviewed and/or updated and implemented or incorporated into the investment plan, if applicable, in the year of rating or in the year preceding the rating date.	1

Table 41

Reliability Levels		Factor
1	No gauging records exist of intakes or introductions into the system.	0
2	Gauging records are taken at all “entry points” into the “system” at least once a year.	0.25
3	Gauging records are taken at all “entry points” into the “system” at least once a month.	0.75
4	Gauging records are taken at all “entry points” into the “system” at least once a day by remote monitoring systems.	0.9
5	Gauging records are taken at all “entry points” into the “system” at least once a day by remote monitoring systems. Gauging equipment calibration practices exist.	1

Glossary ——— System, Entry point into the drinking water supply system

Table 46

Reliability Levels		Factor
1	No records for reclaimed or reused volumes exist.	0
2	Records and measurements of volumes reclaimed in wastewater reclamation plants exist, but there are no measurements of consumption at end destinations.	0.8
3	Records and measurements of reclaimed volumes exist, including measurements of consumption at end destinations.	1

Table 47

Reliability Levels		Factor
1	No evidence exists.	0
2	Evidence exists in the year of rating or in one of the 4 calendar years preceding that date.	1

Table 48

Reliability Levels		Factor
1	No energy consumption records exist.	0
2	Energy consumption records exist for all wastewater treatment plants as a whole based on overall “system” records.	0.33
3	Energy consumption records exist for each wastewater treatment plant.	0.9
4	Energy consumption records exist for each wastewater treatment plant and are included in public documents or reports.	1

Glossary ———→ System

Table 49

Reliability Levels		Factor
1	No records of pollutant loads in inflows and outflows exist.	0
2	Records of outflows and inflows exist for part of the year for all wastewater treatment plants.	0.33
3	Monthly outflow and inflow pollutant load records exist for all wastewater treatment plants.	0.9
4	Weekly or more frequent outflow and inflow pollutant load records exist for all wastewater treatment plants.	1

Table 100

Reliability Levels		Factor
1	Estimate without sufficient substantiation.	0
2	The estimated number of inhabitants is based on data from a “property” or “user” register, without evidence of that register being updated within the year of rating and the year preceding that date.	0.5
3	The estimated number of inhabitants is based on data from a “property” or “user” register and evidence exists of that register being updated within the year of rating and the year preceding that date, and the data are compared with records of connections in the “geographical area to be rated”.	0.75
4	The estimated number of inhabitants is based on data from a “property” or “user” register and evidence exists of that register being updated in the year of rating, and the estimate is based on a ratio of inhabitants per dwelling and is supported by data published by a “competent official body”, and the data are compared with records of connections in the “geographical area to be rated”. Otherwise, the number of inhabitants is taken from an estimate for the calendar year being rated published by a “competent official body”.	1

Glossary ——— Property, Active users, Geographical area to be rated, Competent official body

Table 109

Reliability Levels		Factor
1	Estimated volumes withdrawn	0
2	Monthly records exist of volumes either withdrawn from the environment or obtained from another system's infrastructure and incorporated into the supply, treatment or distribution "system".	0.7
3	Daily records exist for more than 95% of volumes either withdrawn from the environment or obtained from another system's infrastructure and incorporated into the supply, treatment or distribution "system".	0.9
4	Daily records, produced by remotely controlled gauging systems, exist of all volumes either withdrawn from the environment or obtained from another system's infrastructure and incorporated into the supply, treatment or distribution "system".	1

Glossary ———→ System

Table 111

Reliability Levels		Factor
1	Estimated energy consumption.	0
2	Partial or insufficiently long (less than 3 years) records of energy consumption exist.	0.33
3	Partial or insufficiently long (less than 3 years) records of energy consumption exist and are produced by calibrated metering devices or supported by accrediting documents issued by energy supply companies.	0.67
4	Energy consumption records exist for all points of consumption and are produced by calibrated metering devices or supported by accrediting documents issued by energy supply companies.	1

Table 112

Reliability Levels		Factor
1	Estimated energy generation.	0
2	Partial or insufficiently long (less than the last 3 full years) energy generation records exist.	0.33
3	Energy generation records exist for part of the facilities or for insufficiently long time series (less than the last 3 full years) and are produced by metering devices or supported by accrediting documents issued by energy-buying companies.	0.67
4	Energy generation records exist for all the facilities and are produced by metering devices or supported by accrediting documents issued by energy-buying companies.	1

Table 113

Reliability Levels		Factor
1	Estimated emissions and general ratios.	0
2	Records and meter readings exist of the utility's overall energy consumption, as do estimates of its transformation into direct emissions and estimates of vehicle and machinery emissions. Explicit criteria exist to determine equivalence with other gases.	0.8
3	Records and meter readings exist of electricity consumption in all operational centres and in all other facilities that generate direct emissions, such as heating boilers, and estimates exist of direct emissions by vehicles and machinery. Explicit criteria exist to determine equivalence with other gases.	1

B. New Reliability Tables

Incorporated into the analysis of the current Focused Analysis

Table 201

Reliability Levels		Factor
1	There is no evidence	0
2	The strategy is a formal document, but it does not have the approval of the representative body with highest authority in the company	0.5
3	All of the above requirements are met, save seniority	0.7
4	The Strategy exists, is in practice, is duly approved, and specifically mentions climate change	1

Table 202

Reliability Levels		Factor
1	There is no evidence	0
2	There is evidence of the existence and the materialization of some initiative of this type within the past three calendar years	1

Table 203

Reliability Levels		Factor
1	There is no evidence	0
2	There is evidence from within the past year	0.8
3	There is evidence from within the past two years	0.9
4	There is evidence from within the past three years	1

Table 204

Reliability Levels		Factor
1	There is no evidence	0
2	The involvement has been throughout at least the past year	0.8
3	The involvement has been throughout at least the past two years	0.9
4	The involvement has been throughout at least the past three years	1

Table 205

Reliability Levels		Factor
1	There is no evidence	0
2	There is evidence of the acquisition or commitment within the past three calendar years	1

Table 206

Reliability Levels		Factor
1	There is no evidence	0
2	There is evidence of the development or funding of a study within the past five calendar years	1

Table 207

Reliability Levels		Factor
1	There is no evidence	0
2	There is evidence of the implementation of some training course or program, regardless of how many employees are trained	0.7
3	There is evidence of the implementation of courses only in some of the past three years, but for more than 10% of the total pool of trainees	0.8
4	There is evidence of the implementation of courses within the past three years that have reached more than 20% of the total pool of trainees	1

Table 208

Reliability Levels		Factor
1	There is no evidence of the implementation of training programs regarding uncertainty or climate change risks	0
2	There is evidence of the implementation of training programs regarding uncertainty or climate change risks for at least 5% of the employees, or which were implemented within the past three years	0.5
3	There is evidence of the implementation of training programs about uncertainty or climate change risks for at least 5% of the employees within the past three years	1

Table 209

Reliability Levels		Factor
1	There is no evidence	0
2	There is evidence of the commitment in descriptive terms, whether in a document or on a website within the public domain	1

Table 210

Reliability Levels		Factor
1	There is no evidence	0
2	There is documented evidence of the planning exercise that is less than five years old	1

Table 211

Reliability Levels		Factor
1	There is no evidence	0
2	There is documented evidence of the planning exercise that includes considerations established in the practice description that is less than five years old	1

Table 212

Reliability Levels		Factor
1	There is no evidence	0
2	There is only a risk map	0.5
3	There is evidence of the implementation of said policies within the past five calendar years	1

Table 213

Reliability Levels		Factor
1	There is no evidence	0
2	Practices are applied only in one part of the system	0.5
3	There is evidence of the application of these practices within the past three calendar years and they are applied within all of the systems that are within the service company's scope of responsibility	1

Table 214

Reliability Levels		Factor
1	There is no evidence	0
2	There is documented evidence of said policies within the past five calendar years	1

Table 215

Reliability Levels		Factor
1	There is no evidence	0
2	There is documented evidence of the existence and use of said systems within the past calendar year	0.7
3	There is documented evidence of the existence and use of said systems within the past two calendar years	0.8
4	There is documented evidence of the existence and use of said systems within the past three calendar years. If this is entrusted to other entities, there must be evidence of a signed, active agreement	1

Table 216

Reliability Levels		Factor
1	There is no evidence	0
2	There is documented evidence of the existence and use of said systems within the past calendar year	0.7
3	There is documented evidence of the existence and use of said systems within the past two calendar years	0.8
4	There is documented evidence of the existence and use of said systems within the past three calendar years	1

Table 217

Reliability Levels		Factor
1	There is no evidence	0
2	There is documented evidence of the existence and application of said classification within the past calendar year	0.7
3	There is documented evidence of the existence and application of said classification within the past two calendar years	0.8
4	There is documented evidence of the existence and application of said classification within the past three calendar years	1

Table 218

Reliability Levels		Factor
1	No hay evidencia	0
2	There is documented evidence of the existence and application of said classification and quantification within the past calendar year	0.7
3	There is documented evidence of the existence and application of said classification and quantification within the past two calendar years	0.8
4	There is documented evidence of the existence and application of said classification and quantification within the past three calendar years	1

Table 219

Reliability Levels		Factor
1	There is no evidence	0
2	There is documented evidence of the existence and application of said funds within the past calendar year	0.7
3	There is documented evidence of the existence and application of said funds within the past two calendar years	0.8
4	There is documented evidence of the existence and application of said funds within the past three calendar years	1

Table 220

Reliability Levels		Factor
1	There is no evidence	0
2	There is documented evidence of the existence of insurance or policies from within the past calendar year	0.7
3	There is documented evidence of the existence of insurance or policies from within the past two calendar years	0.8
4	There is documented evidence of the existence of insurance or policies from within the past three calendar years	1

Table 221

Reliability Levels		Factor
1	There is no evidence	0
2	There is documented evidence of the simulations or trainings that have been carried out in the past calendar year	0.7
3	There is documented evidence of the simulations or trainings that have been carried out in the past two calendar years	0.8
4	There is documented evidence of the simulations or trainings that have been carried out in the past three calendar years	1

Table 222

Reliability Levels		Factor
1	There is no evidence	0
2	There is documented evidence of the existence of public participation practices within the past three calendar years	1

Glossary of Terms

Reclaimed water

Water that, after its use and collection in the sewage networks, is treated until it meets specific quality standards that make it capable of being used for specific purposes.

Reused water

Water that, after being reclaimed, is used for a specific purpose, in compliance with quality and control standards established by applicable regulations.

Scope of action to evaluate

Refers to the activities related to providing water and/or sanitation services, defined by the set of all stages of service and service functions included in the mandate (or mandates) of the provider that is responsible for the provision of qualifying services.

Scope of evaluation

Setting in which AquaRating is applied, defined along with the scope of action to qualify and the territorial scope to be qualified.

Territorial scope to evaluate

Corresponds to the territory in which the provider is responsible for providing water and/or sanitation services, defined in the “mandate” (or the mandates) of the provider, which covers the provision of qualifying services.

Contingency

Circumstance in which the conditions and factors framing the service have been modified and can cause interruption in service quality or continuity.

Carbon Rights

Refers to the concept of emission rights for gases contaminating the atmosphere. Emission rights trading is a market instrument through which an economic incentive or disincentive is created in pursuit of an environmental benefit: that a set of industrial activities collectively reduces gas emissions polluting the atmosphere.



Renewable energies

Renewable energy refers to energy that is obtained through natural sources that are virtually inexhaustible, whether because of the immense amount of energy they contain, or because they are capable of being regenerated through natural means. Wind and solar energy are examples of renewable energies.

In real time

For the purposes of this document, this term refers to data transmission with time lags of less than one minute.

Green funds

Green funds refer to those funds that manage investments in socially responsible destinations.

Greenhouse gases

A greenhouse gas (GHG) is an atmospheric gas that absorbs and emits radiation within an infrared range. This process is the principal cause of the greenhouse effect.¹ The main GHGs in the Earth's atmosphere are water vapor, carbon dioxide, nitrogen oxide, and the ozone.

Corrective maintenance

Set of inspection and repair actions carried out as the result of a malfunction, anomaly, or incident that has been detected or about which there has been a notification, occurring in the course of normal service operation or provision.

Drinking water supply system entry point

Refers to each one of the points in the infrastructure network for the provision of potable water that is capable of incorporating water into the “system” via catchments in bodies of surface or underground water, or via connection to other systems from which water can be imported. This consideration of connection to other systems includes the possibility of exporting water from the system, which translates into negative flow values. The water can be raw or treated, based on the point in the network where it is incorporated, and the conditions of the water captured or imported.

System

Set of infrastructure, installations, and equipment used by or available for the provision of water supply services (collection of residual water) in a part or the entirety of the service territory that has topological and hydraulic continuity. A system will always be related to a territorial area that it can serve.

Volume of water incorporated into the system

Total volume of water incorporated into the “system” of supply and distribution, whether it is captured via natural means or imported from other systems.

Areas at risk of non-compliance with regulations for water consumption

Areas within the scope of service responsibility that have a likelihood of non-compliance with the values established by regulations, higher than the thresholds established for users in that zone. In situations where there is an absence of reference values or thresholds for probability or scope of the condition, the probability will be calculated by taking as a reference non-compliance that has been recorded in the area during the year of evaluation and the year prior to the evaluation year.



C. New elements of analysis not included in the AquaRating structure

CC1. Strategic positioning of a company with respect to climate change

CC1.1 Formal strategic positioning

AR	Group	Practice	Description	Reliability	Weight
+	CC1.1	CC1.1.1	There is a clear or objective stance regarding climate change within the company's active Strategic Plan	T.201	1

CC1.2. Implications with respect to climate and mitigation

AR	Group	Practice	Description	Reliability	Weight
+	CC1.2	CC1.2.1	Carries out information and awareness campaigns regarding climate change	T.202	1
+	CC1.2	CC1.2.2	The company makes contributions to green funds or similar funds, whether nationally or internationally, whose principal purpose is mitigation of damages and losses related to the effects of climate change.	T.203	2
+	CC1.2	CC1.2.3	The company is visibly and actively involved in programs or initiatives related to urban resilience in the face of climate change, and establishes clear goals and objectives.	T.204	2
+	CC1.2	CC1.2.4	The company participates in some market initiative with respect to emissions or in carbon rights acquisition.	T.205	2

CC1.3 Improving knowledge about climate change in the field

AR	Group	Practice	Description	Reliability	Weight
+	CC1.3	CC1.3.1	The company develops, whether individually or in collaboration, initiatives or studies to update knowledge regarding changes in temperature and how these might affect service provision.	T.206	4
+	CC1.3	CC1.3.2	The company develops, whether individually or in collaboration, initiatives or studies to update knowledge regarding changes in water use and demand under climate change scenarios that could affect service provision.	T.206	4
+	CC1.3	CC1.3.3	The company develops, whether individually or in collaboration, initiatives or studies to update knowledge about energy use patterns that can reflect or be influenced by climate change within the area of service provision, which can affect service provision.	T.206	4
+	CC1.3	CC1.3.4	The company develops, whether individually or in collaboration, initiatives or studies to update knowledge about changes in seasonal precipitation patterns and surface flows, especially during periods of low precipitation, which can influence service provision	T.206	4
+	CC1.3	CC1.3.5	The company develops, whether individually or in collaboration, initiatives or studies to update knowledge about changes in the frequency and intensity of extreme precipitation that can cause floods and may impact service provision	T.206	4

AR	Group	Practice	Description	Reliability	Weight
+	CC1.3	CC1.3.6	The company develops, whether individually or in collaboration, initiatives or studies to update knowledge about changes in ground water conditions, which can potentially affect service provision	T.206	4
+	CC1.3	CC1.3.7	The company develops, whether individually or in collaboration, initiatives or studies to update knowledge about the conditions of watersheds and catchment systems or the quality of raw water, which may be reflected by or influenced by climate change and may affect service provision	T.206	4
+	CC1.3	CC1.3.8	The company develops, whether individually or in collaboration, research studies about new analytic methods for identifying, planning, and managing the activities that contribute to the adaptation to and mitigation of climate change	T.206	3

CC1.4 Positioning with respect to service implications

AR	Group	Practice	Description	Reliability	Weight
+	CC1.4	CC1.4.1	The company has a formal position regarding the vulnerability and variability related to climate change, and guarantees the provision of services within its scope of responsibility	T.207	1

CC1.5 Climate change training for staff and management of uncertainty in water and sanitation service management

AR	Group	Practice	Description	Reliability	Weight
+	CC1.5	CC1.5.1	The company has employee training and formation programs related to climate change and the management of uncertainty and risks	T.208	1

CC2. Commitments and practices for mitigating climate change impacts

CC2.1 Mitigation commitments

AR	Group	Practice	Description	Reliability	Weight
+	CC2.1	CC2.1.1	The company has existing commitments to reduce greenhouse gas emissions	T.209	4
+	CC2.1	CC2.1.2	The company has existing commitments to reduce global water consumption within its area of responsibility	T.209	3
+	CC2.1	CC2.1.3	The company has existing commitments to reduce energy use and consumption within its area of responsibility	T.209	4
+	CC2.1	CC2.1.4	The company has existing commitments to increase its use of renewable energies	T.209	3

CC2.3 Progress parameters

AR	Grupo	Elemento	Descripción	Reliability	Weight
+	CC2.3	CC2.3.1	Reduction of unit water use	T.41, T.100	4
+	CC2.3	CC2.3.2	Reduction of greenhouse gas emissions	T.113	5
+	CC2.3	CC2.3.3	Reduction of energy use and consumption	T.111	5

CC3. Commitments and practices related to policies for adapting to climate change impacts

CC3.1 Planning policies

AR	Group	Practice	Description	Reliability	Weight
+	CC3.1	CC3.1.1	The company has a planning policy that ensures the availability of water resources, in which climate change scenarios with their implications regarding water demand and availability of water resources are explicit and quantified	T. 210	3
+	CC3.1	CC3.1.2	The company has policies for the integrated use of water resources, with explicit references made to supply assurance or climate resilience	T. 211	3
+	CC3.1	CC3.1.3	The company has policies for adaptive assurance of the capacity and redundancy of infrastructure to face climate change	T. 211	3
+	CC3.1	CC3.1.4	The company has policies and initiatives for the protection and reduction of climate change impacts, and prepares threat and risk maps related to climate change	T. 212	4
+	CC3.1	CC3.1.5	The company has policies and initiatives to reduce risks associated with the observed and anticipated impacts of climate change that are linked to episodes of extreme rainfall and prepares risk maps for the population, economic activities, and the aquatic environment	T. 212	4
+	CC3.1	CC3.1.6	The company has operational planning practices that include climate change scenarios	T.213	3
+	CC3.1	CC3.1.7	The company has preventive maintenance practices with an explicit focus on equipment and contingency scenarios	T.213	2
+	CC3.1	CC3.1.8	The company has a policy that addresses compensation for damages and losses related to contingencies	T.214	2

CC3.2 Operational Policies

AR	Group	Practice	Description	Reliability	Weight
+	CC3.2	CC3.2.1	The company has procedures or systems that permit it to anticipate events that could pose a risk to the population, services, or water environment over which it has influence	T.215	4
+	CC3.2.2	CC3.2.2	The company has equipment and facilities for monitoring and detection, and an early warning system for risk scenarios that would affect service provision	T.216	4
+	CC3.2.3	CC3.2.3	The company has support systems for making decisions related to the prevention and management of operational risks in the systems under its responsibility	T.216	3

CC4. Specific policies for contingency management and resilience

CC4.2 Operational policies

AR	Group	Practice	Description	Reliability	Weight
+	CC4.2	CC4.2.1	The company has a schema of possible and likely future scenarios linked to climate change	T.217	3
+	CC4.2	CC4.2.2	The company has a classification and quantification schema for resilience with respect to climate change	T.218	4
+	CC4.2	CC4.2.3	The company has funds earmarked for contingencies	T.219	4
+	CC4.2	CC4.2.4	The company has insurance or risk transfer policies, including contingencies related to hydrometeorological threats exacerbated by climate change	T.220	3
+	CC4.2	CC4.2.5	The company conducts or participates in simulations of contingency situations and team training tasks with (where appropriate) lessons from the occurrence and management of earlier contingency episodes	T.221	4
+	CC4.2	CC4.2.6	The company uses public participation procedures to establish resiliency and the policies for management, communication, and handling of damages and losses in contingency situations	T.222	3

