



Map of Water Regulation in Chile

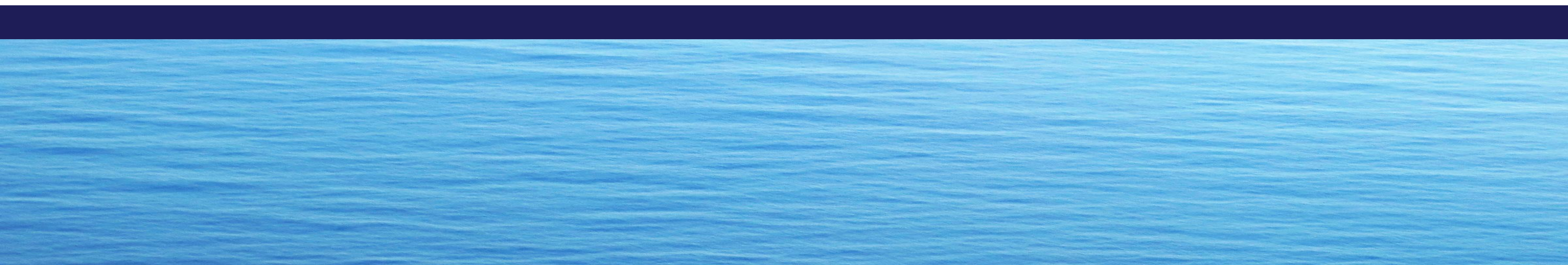


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2 combined ways to regulate private operators in water sector in Chile

1) Private water operators regulated by national regulators

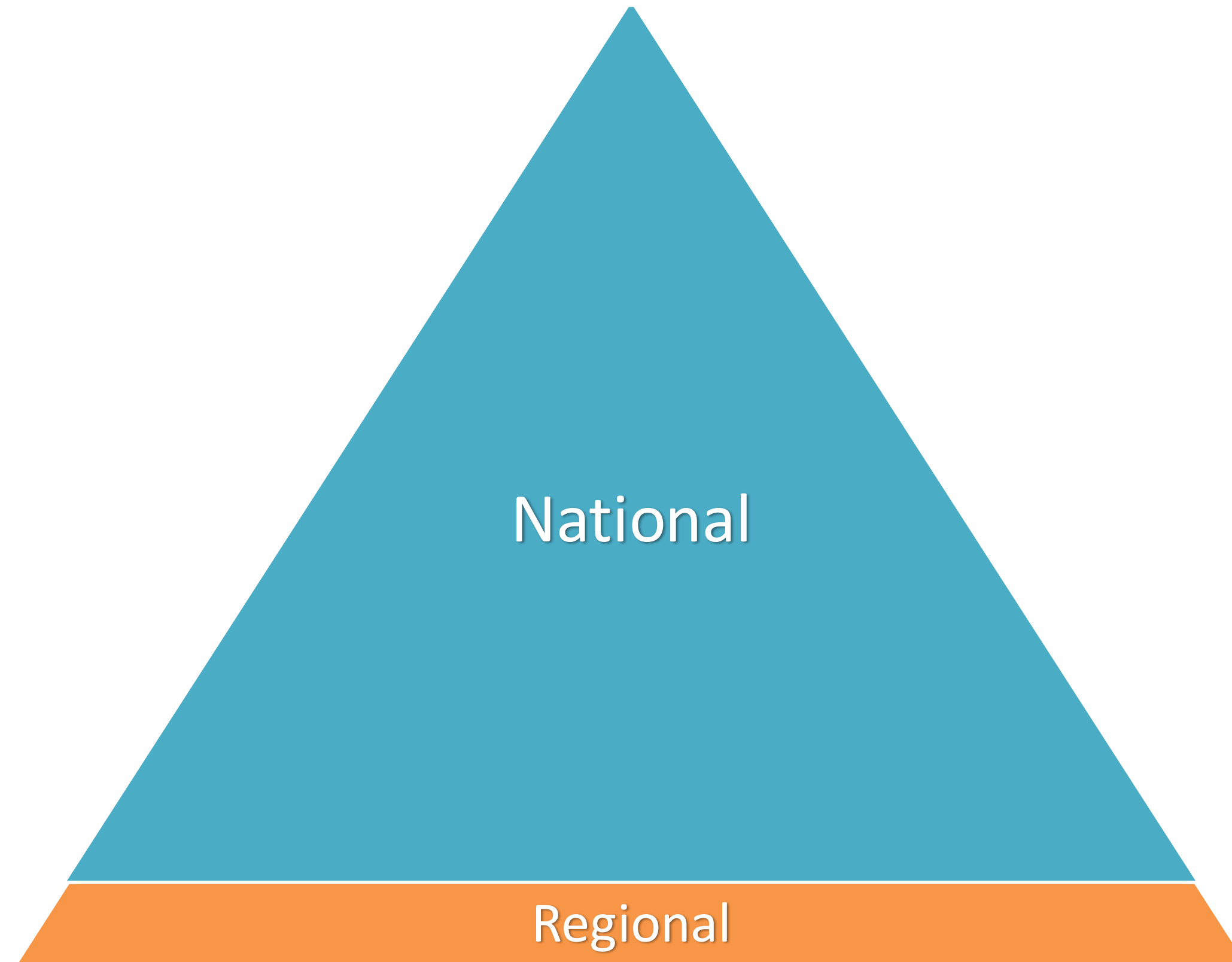


2) Private water operators regulated by contracts: PPPs. Concession contracts are being introduced in the country, with specifications that do not expire unless quality standards are not met.

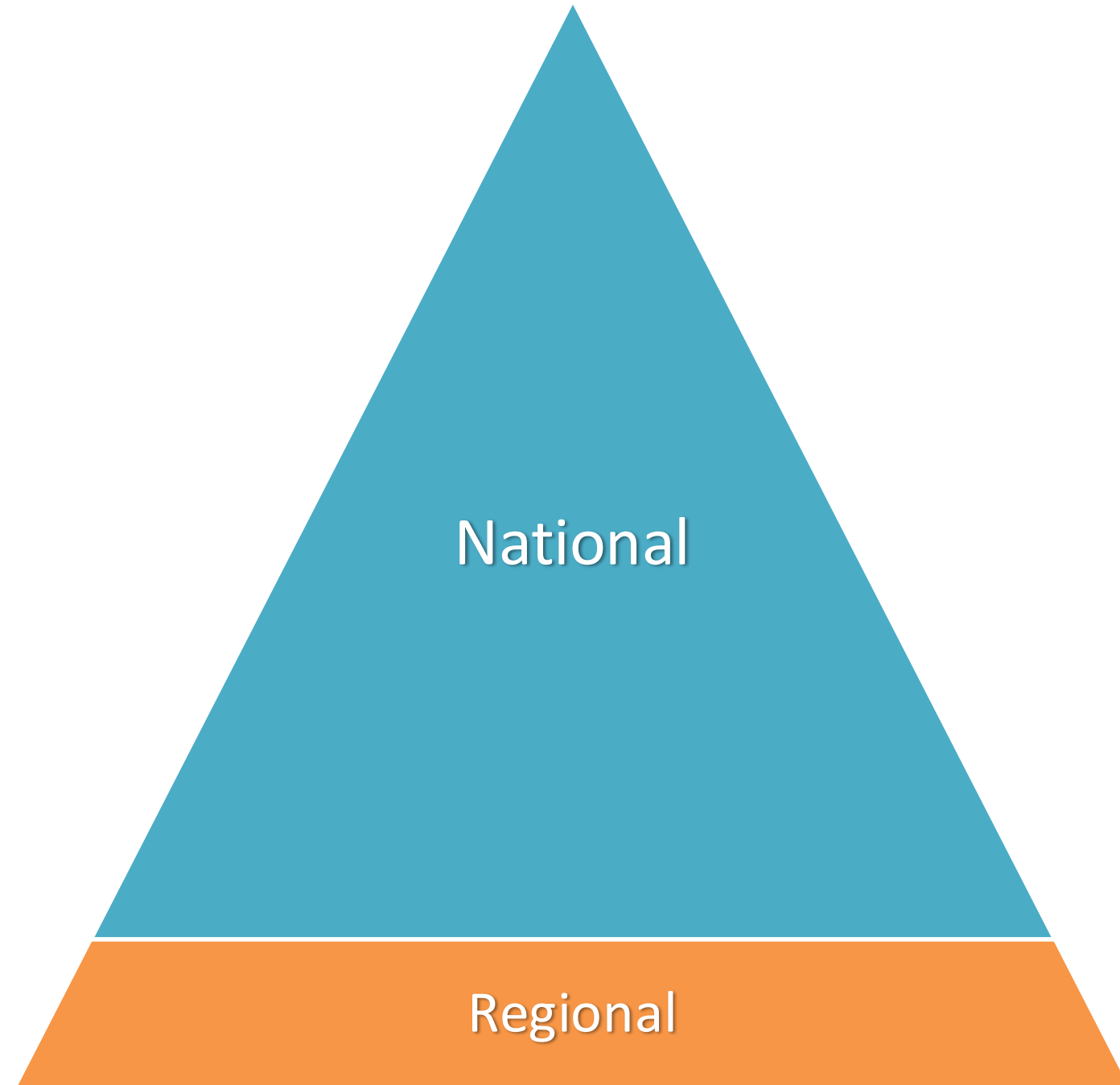
NOTE:
In Chile,
ONE AND UNIQUE regulation for private and
public sector



Regulation centralized nationally



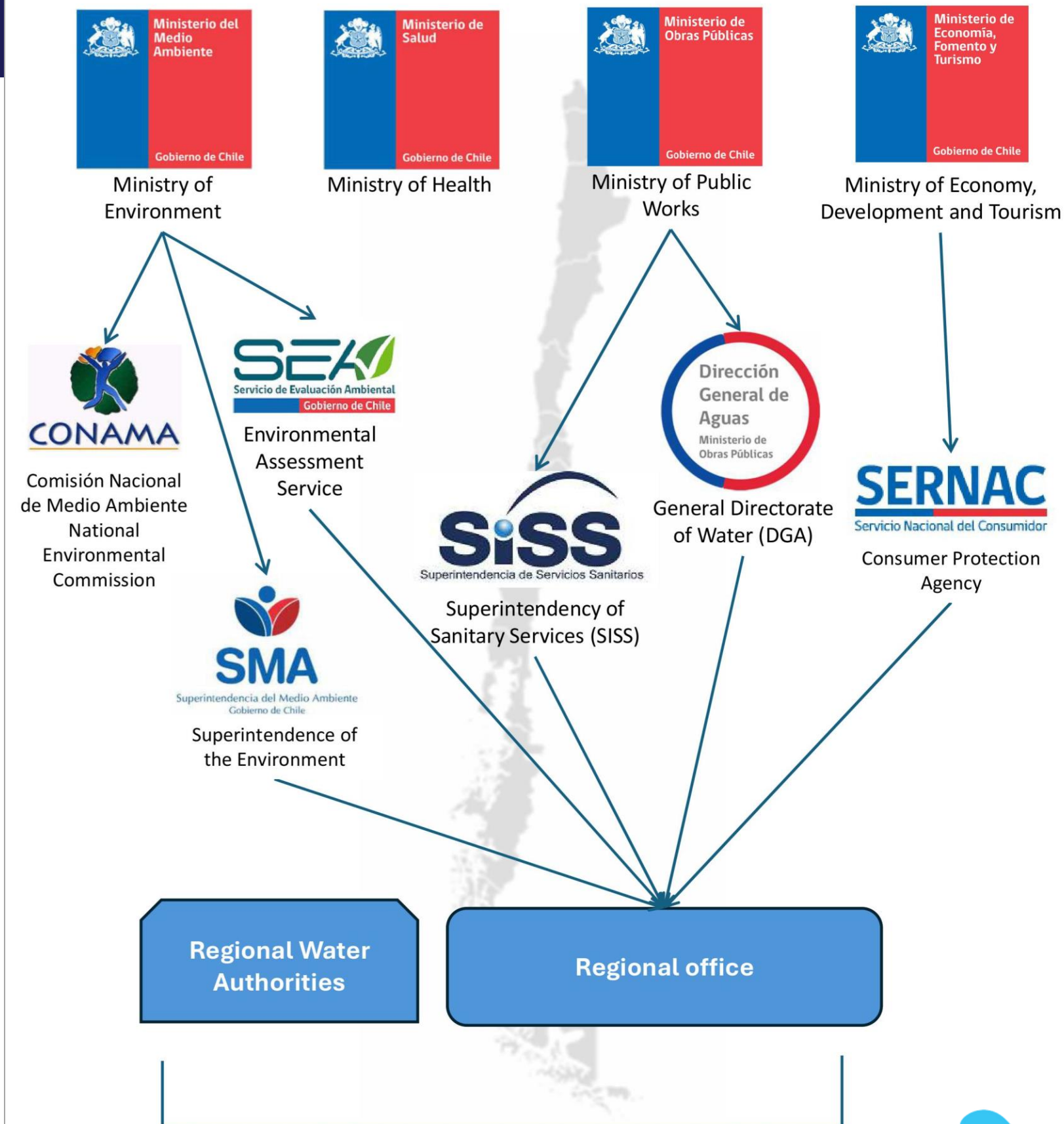
Regulation structure – simplified view



National

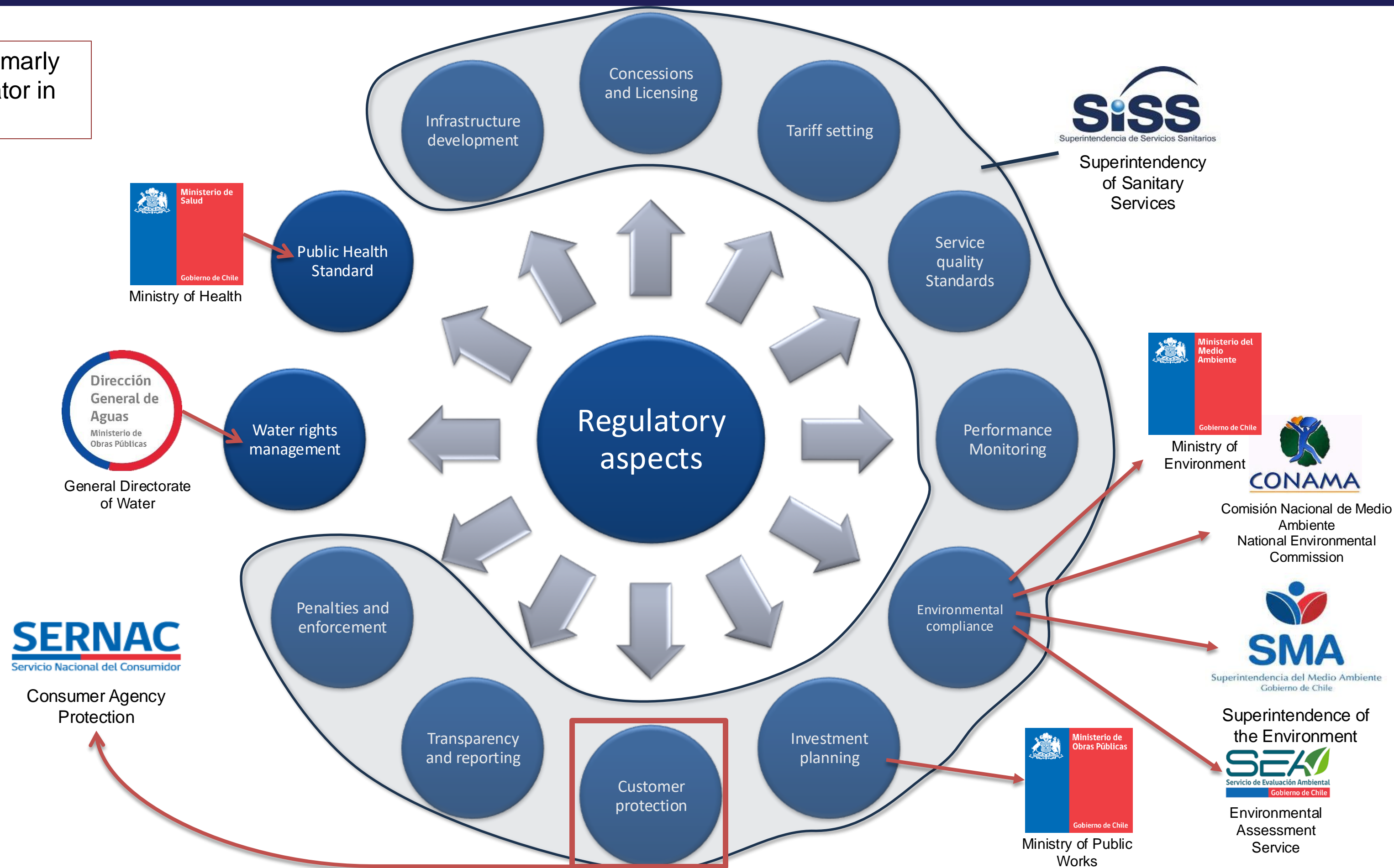
Regional

Chilean regulations of private operators



Water regulation – General Framework

Note: SISS Primarily national regulator in Chile



Role and responsibilities at National level 1/3



- ✓ **Primary regulator** for urban water and sanitation services
- ✓ Responsible for:
 - Grants and oversees concessions to private operators
 - Sets water tariffs every five years
 - Establishes and monitors service quality standards
 - Conducts performance monitoring of operators
 - Handles customer complaints and disputes
 - Enforces regulations and imposes penalties for non-compliance
 - Approves investment plans submitted by operators
 - Ensures transparency through publishing performance data and regulatory decisions



Ministry of
Environment

- ✓ Establishes environmental compliance, particularly for wastewater treatment
- ✓ Involved in environmental impact assessments for water-related projects



Ministry of Health

- ✓ Sets drinking water quality standards
- ✓ Enforces compliance with these standards
- ✓ Monitors public health aspects related to water services



Role and responsibilities at National level 2/3



General Directorate
of Water (DGA)

- ✓ Under the Ministry of Public Works
- ✓ Manages water rights allocation at national level
- ✓ Oversees overall water resource management
- ✓ **Ensures operators comply with water rights allocations**



Comisión Nacional de
Medio Ambiente
National
Environmental
Commission

- ✓ Developed and coordinated national environmental policies and regulations.
- ✓ Oversaw the environmental impact assessment system for new projects.
- ✓ Implemented pollution control measures and set environmental quality standards.
- ✓ Coordinated environmental actions across government agencies and represented Chile in international environmental forums.
- ✓ Operates under the Ministry of Environment, is involved in environmental impact assessments and regulations that may affect water operators.



Environmental
Assessment Service

- ✓ Manages Chile's Environmental Impact Assessment System (SEIA), evaluating the environmental impact of projects and activities.
- ✓ Administers the process of classifying projects into Environmental Impact Declarations (DIA) or Environmental Impact Studies (EIA) based on their potential environmental effects.
- ✓ Coordinates with other public services to ensure comprehensive environmental assessments and compliance with environmental regulations.
- ✓ Promotes and facilitates citizen participation in the environmental assessment process, ensuring public access to environmental information



Role and responsibilities at National level 3/3



Superintendence of
the Environment

- Enforces environmental regulations and laws
- Conducts environmental inspections and audits
- Investigates environmental violations and imposes sanctions
- Oversees environmental impact assessments
- Promotes environmental protection and sustainable development



Consumer Agency
Protection

- Protects consumer rights and educates consumers
- Mediates disputes between consumers and businesses
- Enforces consumer protection laws and processes complaints
- Conducts market studies and issues product/service warnings
- Proposes improvements to consumer protection legislation



Role and responsibilities at Regional level

Regional Water Authorities

- ✓ Implement national water policies and regulations at the regional level, adapting them to local conditions and needs.
- ✓ Manage water resources within their jurisdiction, including allocation of water rights and monitoring of water use.
- ✓ Coordinate with other regional and local entities on water-related issues, including infrastructure planning and drought management.
- ✓ Provide technical support and information to water users and local communities on water management and conservation.

Regional offices of DGA and SISS

- ✓ **Regional offices of DGA:**
 - Implement national water policies and manage water resources at the regional level.
 - Process and grant water rights applications within their jurisdiction.
 - Monitor water use and enforce compliance with water regulations.
 - Collect and manage hydrological data for their region.
- ✓ **Regional offices of SISS:**
 - Oversee and regulate water and sanitation services provided by private operators in their region.
 - Monitor compliance with service quality standards and tariff regulations.
 - Handle customer complaints and mediate disputes between users and service providers.
 - Collect and report regional data on water and sanitation services to the central SISS office



How PPPs operate in Chile

• Concession Model

- The primary form of PPP in Chile's water sector is the concession model.
- Private companies are granted long-term concessions (typically 30 years) to operate and maintain water and sanitation services.
- The state retains ownership of the infrastructure, while private operators are responsible for service delivery, maintenance, and investments.

• Regulatory Framework:

- PPPs are regulated primarily by the Superintendencia de Servicios Sanitarios (SISS).
- SISS sets tariffs, monitors performance, and enforces service standards.

• Investment Obligations:

- Concessionaires are required to make significant investments in infrastructure improvement and expansion.
- Investment plans must be approved by SISS and are typically reviewed every five years.

• Risk Allocation:

- Operational and commercial risks are generally borne by the private operator.
- The government retains some regulatory and political risks.

• Tariff Structure:

- Tariffs are set by SISS based on a model of an efficient company.
- They are designed to cover operational costs and provide a return on investment.
- Tariffs are reviewed every five years.

• Performance Monitoring:

- SISS closely monitors the performance of concessionaires against established benchmarks.
- This includes water quality, service continuity, customer service, and environmental compliance.

• Rural Areas:

- While most urban areas are served by PPPs, rural water supply is often managed by community-based organizations with government support.

• Dispute Resolution:

- Mechanisms are in place for resolving disputes between operators, regulators, and consumers.
- This includes administrative procedures and, in some cases, arbitration.

• Transparency and Accountability:

- Concessionaires are required to provide regular reports to SISS.
- SISS publishes performance data and regulatory decisions to ensure transparency.

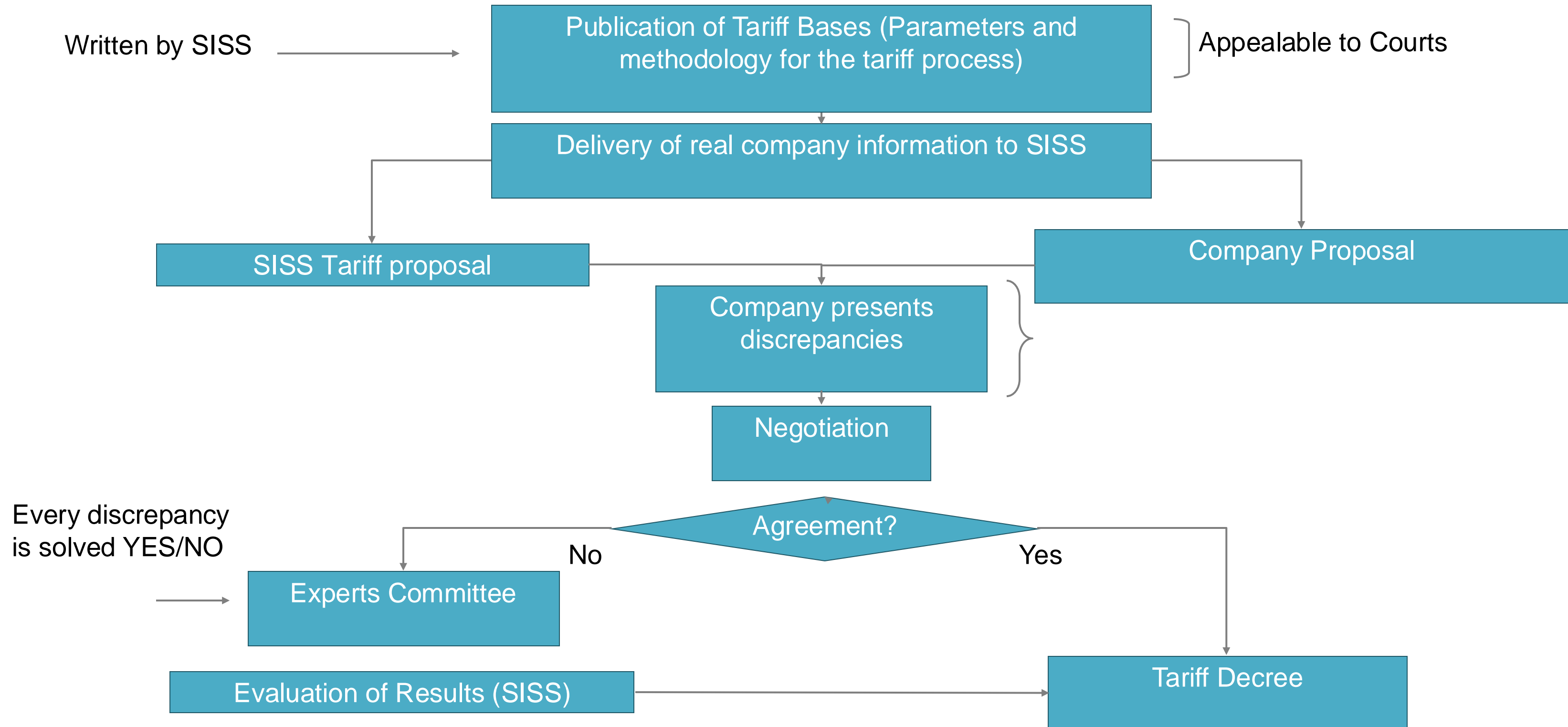


Tariffs regulation

- Tariffs are reviewed and reset every **5 years**
- **Technical regulatory framework** defined by law
- **Regulator (SISS) is the counterpart** in the tariff setting process, which lasts at least 1 year
- Tariffs are based on the long-term total cost of a **model company**
- Discrepancies are solved by an **independent experts committee**
- Minimum real return on assets of 7% after taxes
- **Automatic interim adjustments** linked to polynomials based on CPI and WPI indexes
- **Government subsidies** for low-income clients



Tariffs regulation



Water tariffs regulation

- **Regulatory Authority:** The SISS is responsible for setting and regulating water tariffs.
- **Tariff-Setting Process:** Tariffs are set every five years through a structured process. The process involves both the SISS and the water companies.
- **Efficient Company Model:** Tariffs are based on the costs of a hypothetical efficient company, not the actual costs of the operating company. This model incentivizes companies to improve efficiency.
- **Cost Components:** Tariffs are designed to cover operational and maintenance costs, capital costs, and a return on investment.
- **Long-term Marginal Cost:** The tariff structure is based on the long-term marginal cost of providing water and sanitation services.
- **Negotiation Process:** There's a negotiation process between SISS and the water companies. If an agreement can't be reached, an expert panel is convened to arbitrate.
- **Tariff Structure:** Typically includes a fixed charge and a variable charge based on consumption. May include different rates for different consumption blocks to encourage conservation.
- **Indexation:** Tariffs are indexed to various factors (e.g., inflation, exchange rates) to allow for adjustments between five-year reviews.
- **Subsidies:** A separate subsidy system exists to help low-income households pay their water bills. Subsidies are administered by municipalities and funded by the national government.
- **Transparency:** The tariff-setting process and results are made public to ensure transparency.
- **Special Circumstances:** Provisions exist for extraordinary tariff reviews in case of significant changes in conditions or investments.



Main regulations governing water supply and sanitation

1/2

- ✓ **Water Code (Código de Aguas) of 1981:**
 - This is the fundamental law governing water rights and water resource management in Chile.
 - It establishes the framework for water rights as tradable commodities.
- ✓ **Concessions System – Quality of Service Law: DFL 382/1988**
- ✓ **Tariffs Law: DFL 70/1988**
- ✓ **Subsidies Decree – DS 985/1998**
 - This law establishes a subsidy system to ensure access to water and sanitation services for low-income households.
- ✓ **General Law of Sanitary Services (Ley General de Servicios Sanitarios) of 1988:**
 - This law provides the regulatory framework for water and sanitation services.
 - It establishes the concession system for private operators.
- ✓ **Law Creating the Superintendency of Sanitary Services (Ley de la Superintendencia de Servicios Sanitarios - SISS) of 1990:**
 - This law created the main regulatory body (SISS) overseeing the water and sanitation sector.
- ✓ **Tariff Law (Ley de Tarifas) of 1988:**
 - This law establishes the methodology for setting water and sanitation tariffs.
- ✓ **Environmental Framework Law (Ley de Bases Generales del Medio Ambiente) of 1994:**
 - This law sets the framework for environmental protection, including regulations on water resources and wastewater treatment.
- ✓ **Drinking Water Quality Standards (Norma Chilena 409):**
 - This regulation establishes the quality standards for drinking water.



Main regulations governing water supply and sanitation 2/2

- **Wastewater Discharge Standards (Decreto Supremo 90):**
 - This decree sets the standards for wastewater discharge into water bodies.
- **Glacier Protection Law (2021):**
 - Aims to protect glaciers and their surrounding environments
- **Regulations on water rights:**
 - Govern the process of granting, transferring, and managing water rights
- **Drought management regulations:**
 - Provide framework for managing water resources during drought periods
- **Groundwater regulations:**
 - Control the extraction and use of groundwater resources
- **River basin management regulations:**
 - Promote integrated management of water resources at the basin level
- **Water user organizations regulations:**
 - Govern the formation and operation of water user associations
- **Regulations on dam safety and operation:**
 - Ensure the safe construction and operation of dams
- **Desalination plant regulations:**
 - Govern the construction and operation of desalination facilities
- **Water efficiency regulations:**
 - Promote water conservation and efficient use in various sectors



AquaFed's comments on Chilean regulation (1/2)

- **Do you think the legal, policy and regulatory framework in Chile enables private operators to grow their business?**

Yes, this has been demonstrated in the past where significant amounts of money were invested by different operators in the country to increase the coverage of wastewater treatment.

- **What are the pros of the Chilean system?**

It is a regulatory framework established by law, applicable to all companies in the country. Concessions have no expiration date except in case of lack of committed investment or failures to provide the standards established in the country.

- **What are the cons of the Chilean system?**

As the tariff system is based in a model company, there are no incentives for maintenance capex.

- **Are there legal or regulatory barriers to innovation?**

No, it is possible to innovate. The various challenges that Aguas Andinas has taken on since its origin - such as the expansion of wastewater treatment, the increase in hours of autonomy and the search for new water sources - have driven the search for innovative solutions that set the standard in the industry. Over the years, the company has developed a solid innovation system based on a strategy aligned with its business objectives, with governance that involves the entire organization and a balanced portfolio of projects that enhance growth and efficiency to contribute to a most sustainable city. At Aguas Andinas, innovation focuses on applied research and experimental development of new products or processes.



AquaFed's comments on Chilean regulation (2/2)

- **Are there any legal or regulatory barriers to investment?**

Main barrier is the amount of money required to buy a company with the concession area.

- **Could there be more regulatory incentives for investment?**

Yes, the narrow interpretation of the regulator to some current laws is creating problems to materialize profitable investments.

- **Do Chilean regulators have efficient skills and capacity to be able to do their job?**

Yes, the regulator has a specialized team, capable of being the counterpart of water companies.



ANNEXES

- Websites
- Tariffs process & determination

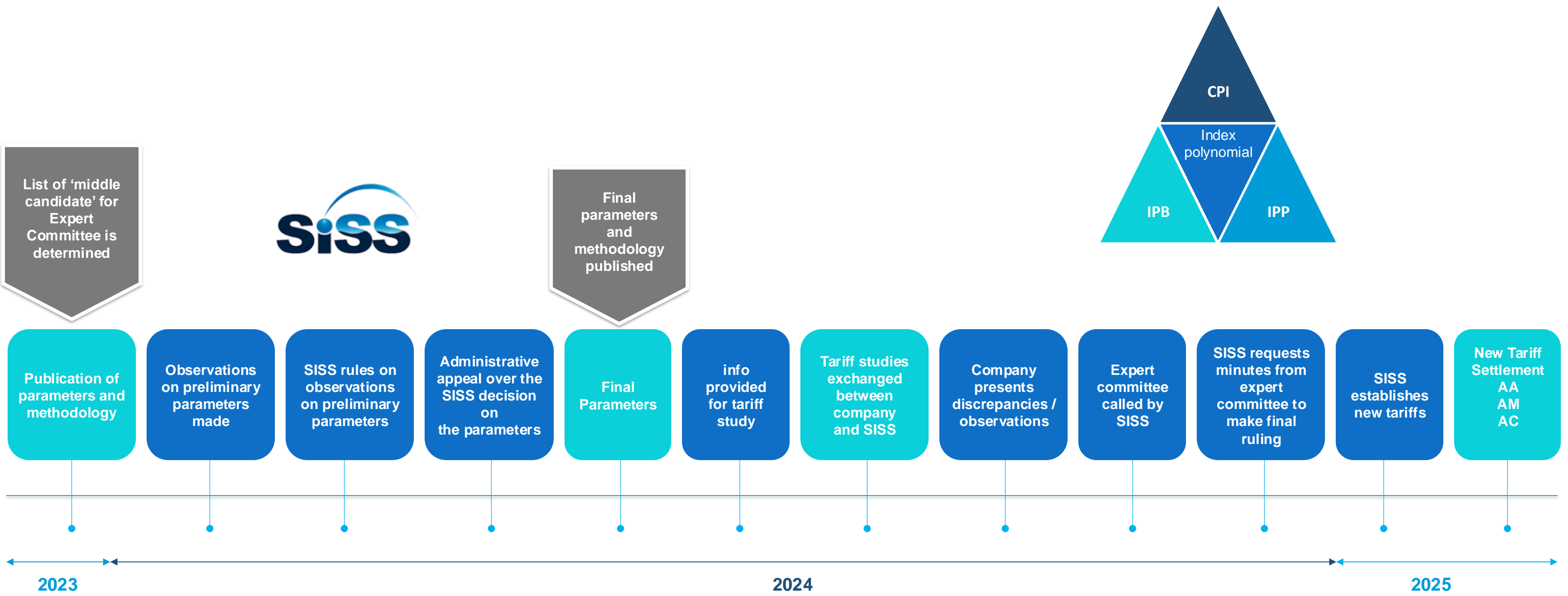


Websites

- <https://www.sea.gob.cl/>
- Servicio de Evaluación Ambiental (SEA) official website: <https://www.sea.gob.cl/>
- OECD (2016), "Environmental Performance Reviews: Chile 2016", OECD Publishing, Paris. <https://www.oecd.org/chile/oecd-environmental-performance-reviews-chile-2016-9789264252615-en.htm>
- Tecklin, D., Bauer, C., & Prieto, M. (2011). "Making environmental law for the market: the emergence, character, and implications of Chile's environmental regime." *Environmental Politics*, 20(6), 879-898.
- Ministerio del Medio Ambiente (Ministry of Environment) official website: <https://mma.gob.cl/>
- SEA plays a crucial role in Chile's environmental management system, particularly in assessing and mitigating the environmental impacts of development projects.
- <https://www.gwp.org/en/partner/existing-partners/meet-our-partners/Direccion-General-de-Aguas-DGA/>
- <http://www.dga.cl/publicacionesyestudios/publicacionesenlinea/Documents/mercado%20del%20agua/7.pdf>
- https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Modernization%20of%20Chile%27s%20Water%20Code_Santiago_Chile_01-18-2022.pdf
- <https://dga.mop.gob.cl/>
- <https://link.springer.com/article/10.1007/s12116-014-9154-2>
- <https://www.oecd.org/chile/water-governance-in-chile-9789264275416-en.htm>
- <https://www.mop.cl/>
- <https://mma.gob.cl/>
- <https://www.siss.gob.cl/>
- <https://www.tandfonline.com/doi/abs/10.1080/09644016.2018.1516498>
- <https://repositorio.cepal.org/handle/11362/6324>
- <https://cenrep.ncsu.edu/2019/05/09/the-cost-of-water-regulation-in-northern-chile/>
- [Understanding Environmental Regulations and Compliance Obligations in Chile](#)
- <https://www.sernac.cl/portal/617/w3-channel.html>
- <https://portal.sma.gob.cl/>
- <https://www.aguasandinasinversionistas.cl/~media/Files/A/Aguas-IR-v2/annual-reports/en/aguas-andinas-annual-report-2023.pdf>

Tariffs Process

At least a one year process

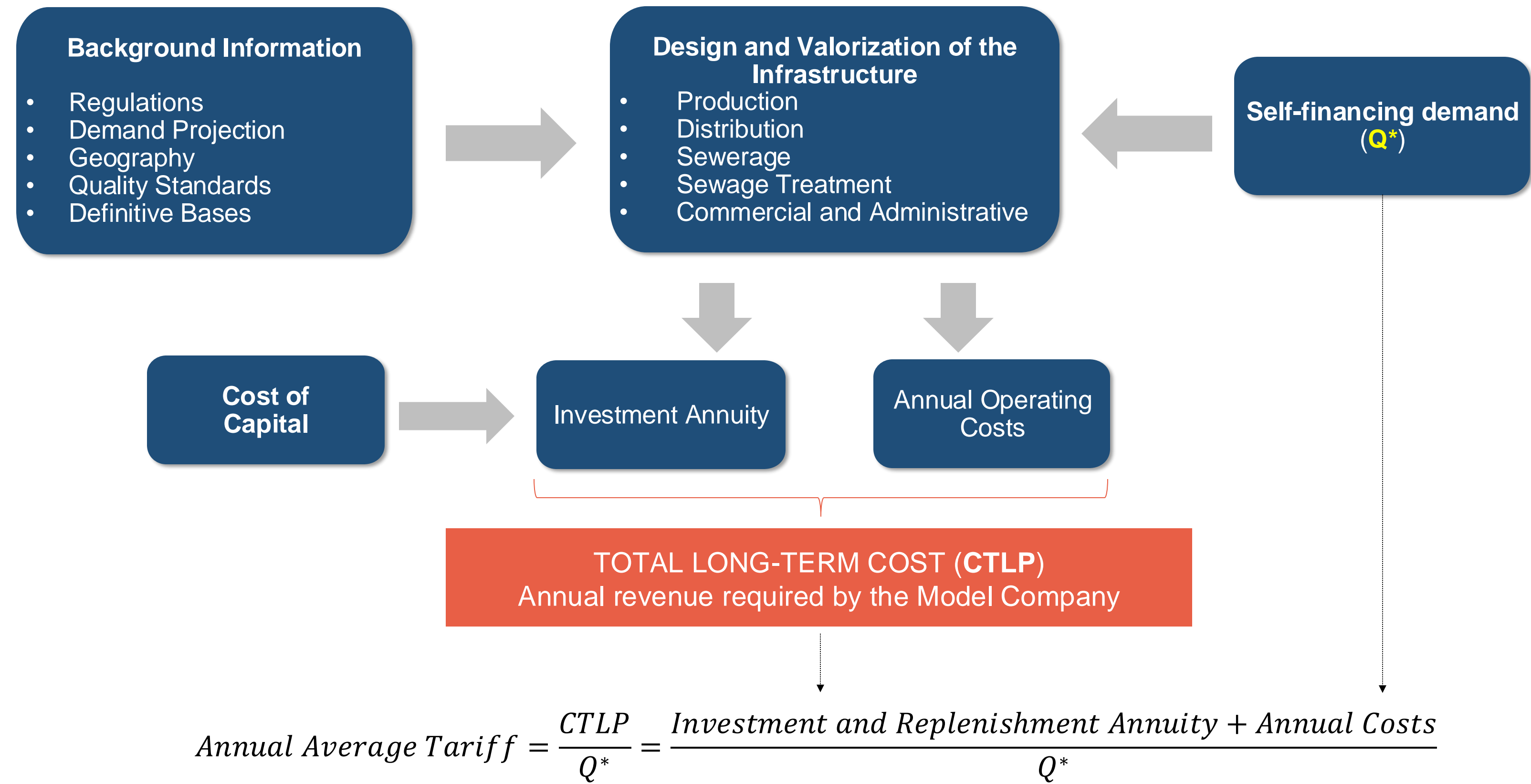


Tariffs Process

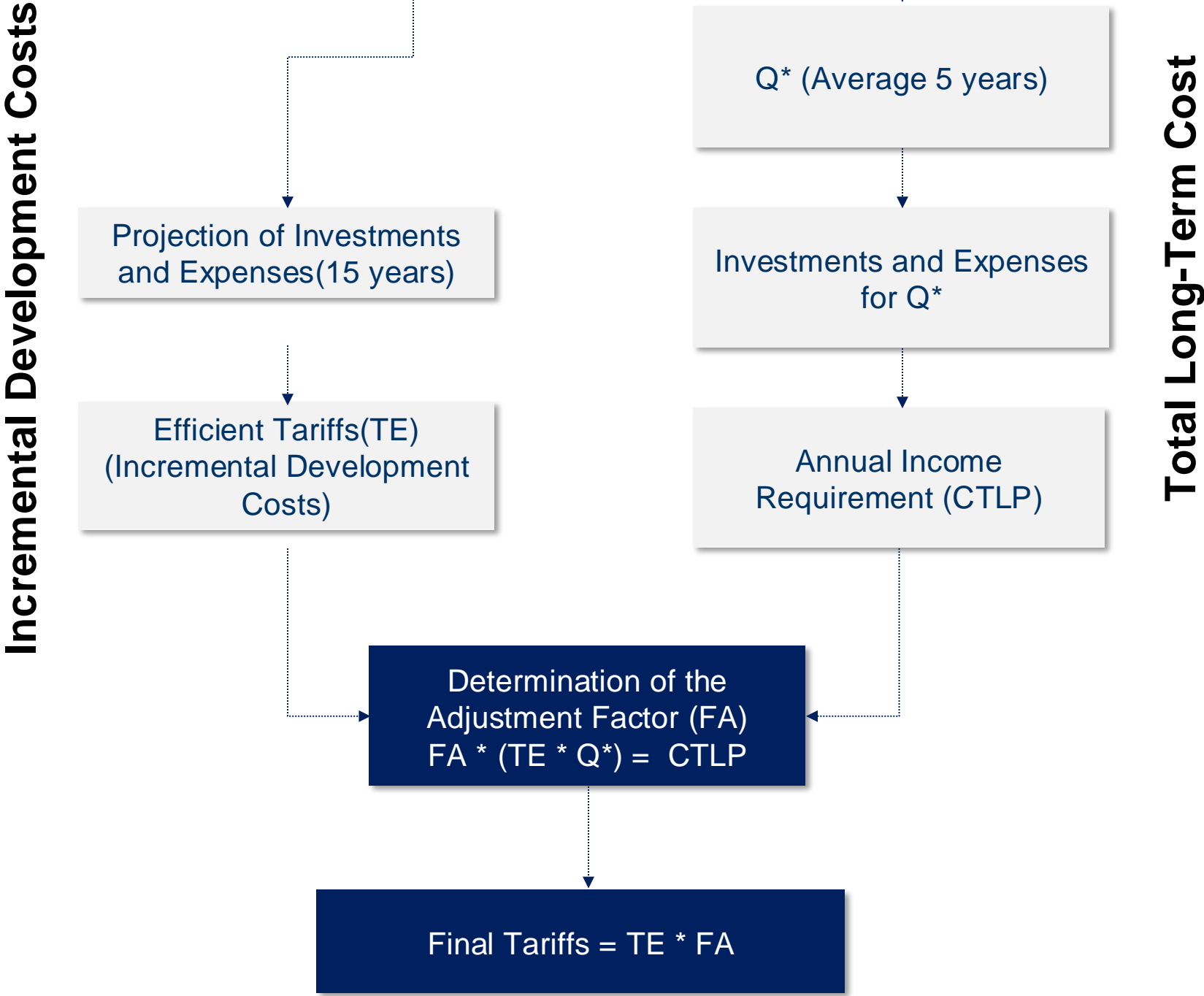
Experts Committee

- At the beginning of each tariff process, the company and the SISS agree on a list of at least 3 experts.
-
- If no agreement is reached on the final result of the tariff within the established negotiation period, a Committee of Experts, composed of 3 members, is convened.:
 - 1 elected by SISS
 - 1 chosen by the company
 - 1 chosen by the SISS from the previously agreed list.
- The Commission pronounces itself and gives a final ruling on each of the discrepancies submitted by the company and on which no agreement was reached with the SISS.
- The SISS interprets the Commission's rulings and prepares the tariff decree.
- The tariff decree is presented for review to the Comptroller's Office, and then promulgated by the Ministry of Economy.

Tariff Determination



Tariff Determination



Incremental Development Costs (Marginal Costs) are used to determine the tariff structure

1.2.1. Grupo 1: Gran Santiago

Comprende el sistema del Gran Santiago que incluye las localidades de: Gran Santiago, Pirque, los sectores denominados Rinconada de Maipú, Plazuela Los Toros, y otros sectores de La Florida y Puente Alto.

Variable	Definición	Valor
CF	Cargo fijo por cliente.	540,78
CV1	Cargo variable por producción de agua potable en período no punta.	130,09
CV2	Cargo variable por producción de agua potable en período punta.	130,09
CV3	Cargo variable de sobreconsumo por producción de agua potable en período punta.	380,80
CV4	Cargo variable por distribución de agua potable en período no punta.	178,56
CV5	Cargo variable por distribución de agua potable en período punta.	178,56
CV6	Cargo variable de sobreconsumo por distribución de agua potable en período punta.	520,85
CV7	Cargo variable por recolección de aguas servidas.	220,13
CV8	Cargo variable por disposición de aguas servidas	33,21

1.2.2. Grupo 2: Localidades

Cost of Capital

Risk Free Rate

Average internal rate of return offered by the Central Bank of Chile for instruments in national currency (UF) with a term greater than or equal to 8 years (BCU)

Risk Premium

- $3.0 \% < r < 3.5 \%$
- Company size (Equity, Assets, Annual Sales)
- Customer Type (residential over total billing, spa over total billing)

Minimum Rate of Return = 7%

Capital Cost in Tariff Processes of Grupo Aguas			
Company	3rd PROCESD	4th PROCESS	5o. 6to. 7mo PROCESS
AGUAS ANDINAS	9.96%	7.69%	7.00%
AGUAS CORDILLERA	10.10%	7.12%	7.00%
AGUAS MANQUEHUE	10.11%	7.30%	7.00%

Cost of Capital

=

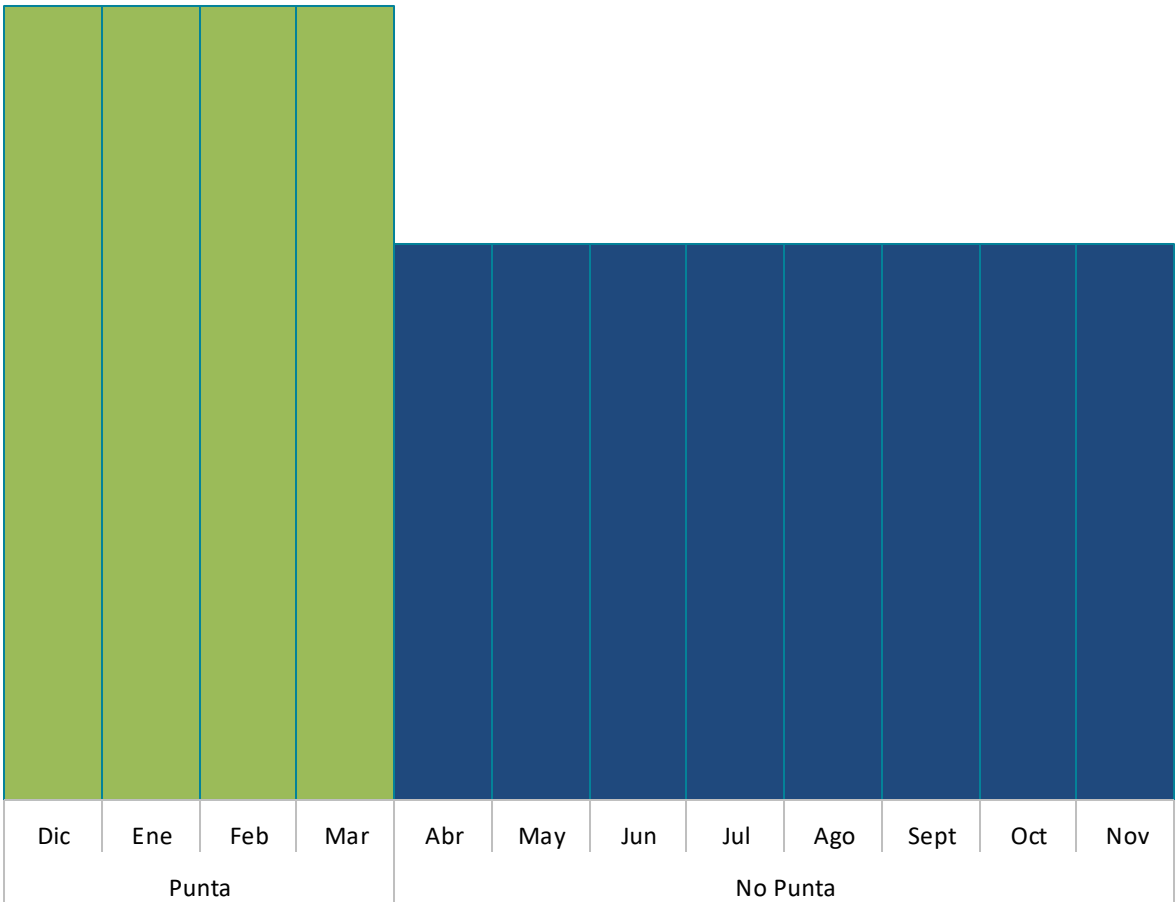
Risk Free Rate

+

Risk Premium

Overconsumption Rate – Peak and Non-Peak Periods

- **Variable charges apply to each m3 of drinking water metered**
- The non-peak period considers the readings made between the following dates:
 - April 1 and November 30 (8 months, Aguas Andinas)
 - May 1 and October 31 (6 months, AC and AM)
- The peak period considers the readings in the complementary period
- Overconsumption is considered to be the excess of invoiced volume of drinking water over the average of the monthly consumption of the non-peak period or over the following limits (at the higher of both):
 - 40 m³ (Aguas Andinas)
 - 60 m³ (Aguas Cordillera)
 - 70 m³ (Aguas Manquehue)



Indexation of Tariffs

- Indexation is the mechanism that **allows maintaining the real value of the tariffs**, through the automatic readjustability of the tariff charges, contained in the respective Tariff Decrees.
- Indexation operates when as a result of variations in the price indices that make up the polynomials, at least one tariff varies by at least **+ - 3%**.
- The indexation polynomials and the respective price indices should represent the cost structure of the model company.
- In the tariff study, the polynomials associated with each tariff charge are established..

Tarifas que se consideran para aplicar una indexación:

- Cargo Fijo Cliente (\$/mes, con IVA)
- Tarifa de Agua Potable No Punta (\$/m3, con IVA)
- Tarifa de Agua Potable Punta (\$/m3, con IVA)
- Tarifa de Agua potable Sobreconsumo (\$/m3, con IVA)
- Tarifa de Alcantarillado (\$/m3, con IVA)

**Weighted average polynomial
Aguas Andinas
VII Proceso Tarifario**

$$IN_i = a_i * IIPC + b_i * IIPBI + c_i * IIPPIM$$

60.0%

9.4%

30.6%

$$IIPC = IPC / IPC_0$$

Variación del IPC con respecto al valor del año base (Dic 2018)

$$IIPBI = IPBI / IPBI_0$$

Variación del índice de precios de bienes importados sector manufacturero con respecto al valor del año base (Dic 2018)

$$IIPPI = IPPI / IPPI_0$$

Variación del índice de precios de productor sector manufacturero con respecto al valor del año base (Dic 2018)

Tariff Components

CTLP Base (Aguas Andinas Individual)

Millones de CLP de 2018

ITEM	CTLP (Millones de CLP/año)	% de CTLP Total Base
Derechos de agua	12.104	3,0%
Captaciones y embalse	8.487	2,1%
Plantas de tratamiento de agua potable	9.739	2,5%
Redes de agua potable y arranques	38.106	9,6%
Redes de aguas servidas y uniones domiciliarias	66.575	16,8%
Interceptor Mapocho	3.965	1,0%
Interceptor Zanjón	1.781	0,4%
Plantas de Tratamiento de Aguas Servidas Localidades	2.892	0,7%
Plantas de Tratamiento de Aguas Servidas Trebal Mapocho	28.535	7,2%
Plantas de Tratamiento de Aguas Servidas Farfana	30.204	7,6%
Gastos energía eléctrica	8.156	2,1%
Gastos productos químicos	8.359	2,1%
Gastos de personal	49.352	12,4%
Gastos transporte y disposición de lodos	6.823	1,7%
Gastos Servicios de Operación y mantenimiento	10.324	2,6%
SUBTOTAL	285.401	71,9%

TOTAL BASE	397.058
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Cargos Adicionales

Millones de CLP de 2018

ITEM	CTLP (Millones de CLP/año)
Turbiedad Extrema 34 Horas (Estanque Pirque)	6.596
Turbiedad Extrema 37 HRS (Pozos Cerro Negro)	2.399
Turbiedad Extrema 48 HRS (Conducción El Manzano-Pirque)	3.047
Remoción Nutrientes Trebal-Mapocho	3.020
Remoción Nutrientes Farfana	1.881
Secado Térmico Rutal	1.087
TOTAL ACUERDO	415.088

Composición del CTLP

Gastos: ~25 %

Inversiones: ~75 %

Tariffs Evolution

Marzo 2020
Tarifa Media: \$ 788,0
Indexación Enero:
3,0%
Baja tarifas: -3,0%
Polinomio: 0,7%

Indexación 03-21
Tarifa Media: \$ 823,9
Variación: 2,6%

Indexación 08-21
Tarifa Media: \$ 856,4
Variación: 3,5%

Indexación 02-22
Tarifa Media: \$ 927,7
Variación: 4,3%

Nitrógeno Trebal 04-22
Tarifa Media: \$ 963,6
Variación: 0,7%

Indexación 09 2022
Tarifa Media: \$ 1039,7
Variación: 3,9%

Indexación 02 2023
Tarifa Media:\$ 1064,3
Variación: 1,7%

Encap Rutal 12-24
Tarifa Media: \$ 1.063,6
Variación: 0,2%

Autonomía 48 horas 01-25
Tarifa Media: \$ 1.072,8
Variación: 0,9%

Pirque 04-20
Tarifa Media: \$ 803,2
Variación: 1,9%

Nitrógeno Farfana 04-21
Tarifa Media: \$ 827,3
Variación: 0,4%

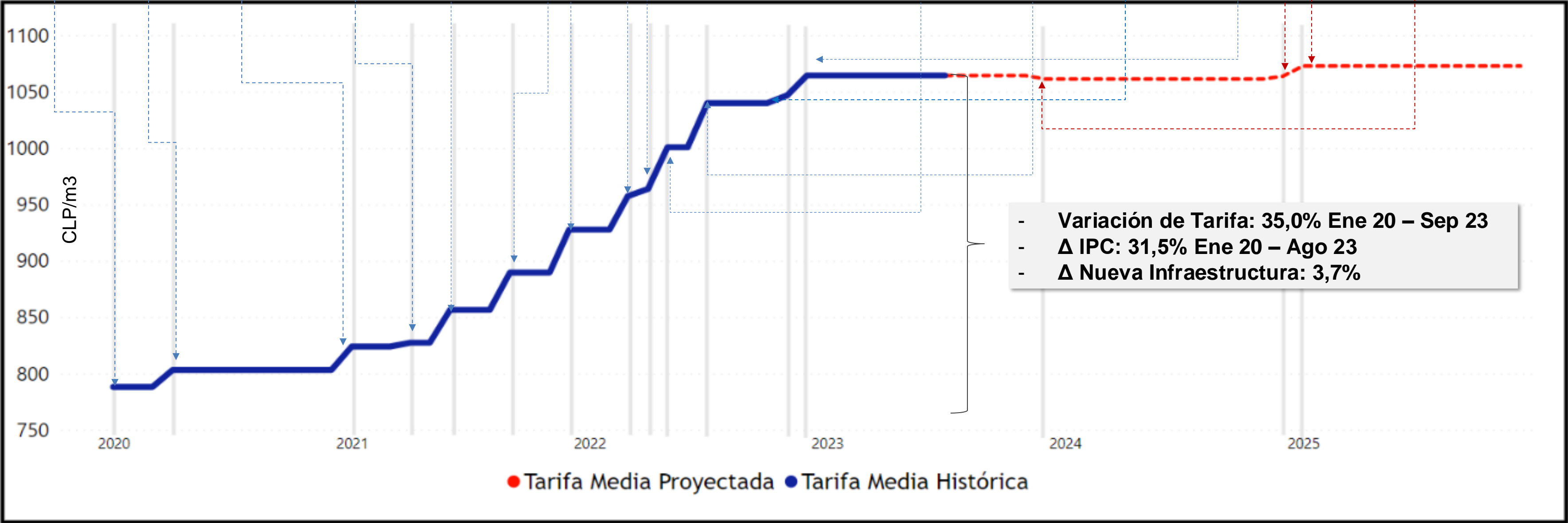
Indexación 11-21
Tarifa Media: \$ 889,5
Variación: 3,9%

Indexación 05-22
Tarifa Media: \$ 957,3
Variación: 3,2%

Indexación 07-22
Tarifa Media: \$ 1.007,0
Variación: 3,8%

Pozos Cerro Negro 11-22
Tarifa Media \$ 1.046,8
Variación: 0,7%

Descuento Alto Maipo 12-23
Tarifa Media: \$ 1.061,3
Variación: - 0,3%



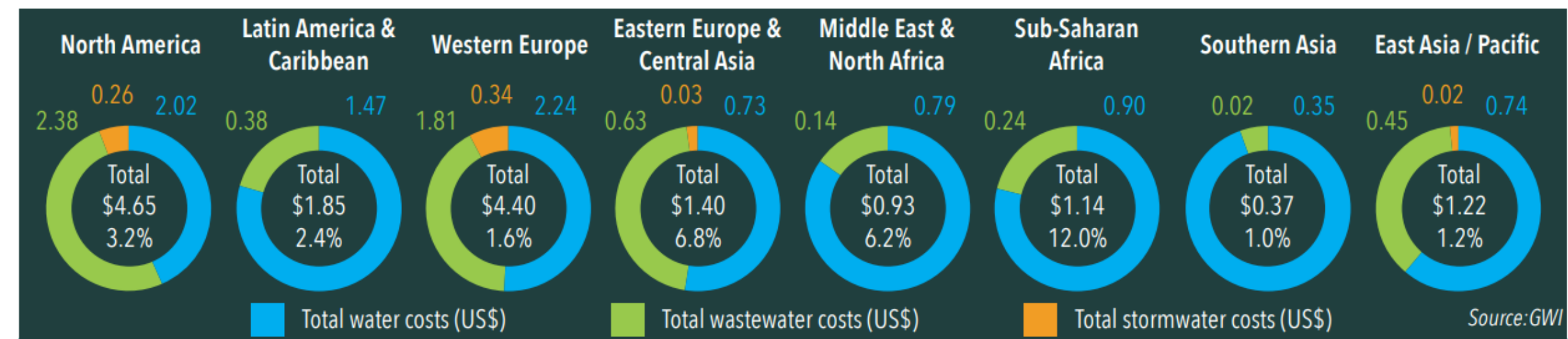
Tariff Benchmarking

Average World Tariffs

The average water tariff worldwide is 2.34 USD/M3. As the following chart prepared by GWI shows, the water tariff is made up of fixed and variable charges for drinking water, sewage and rainwater.

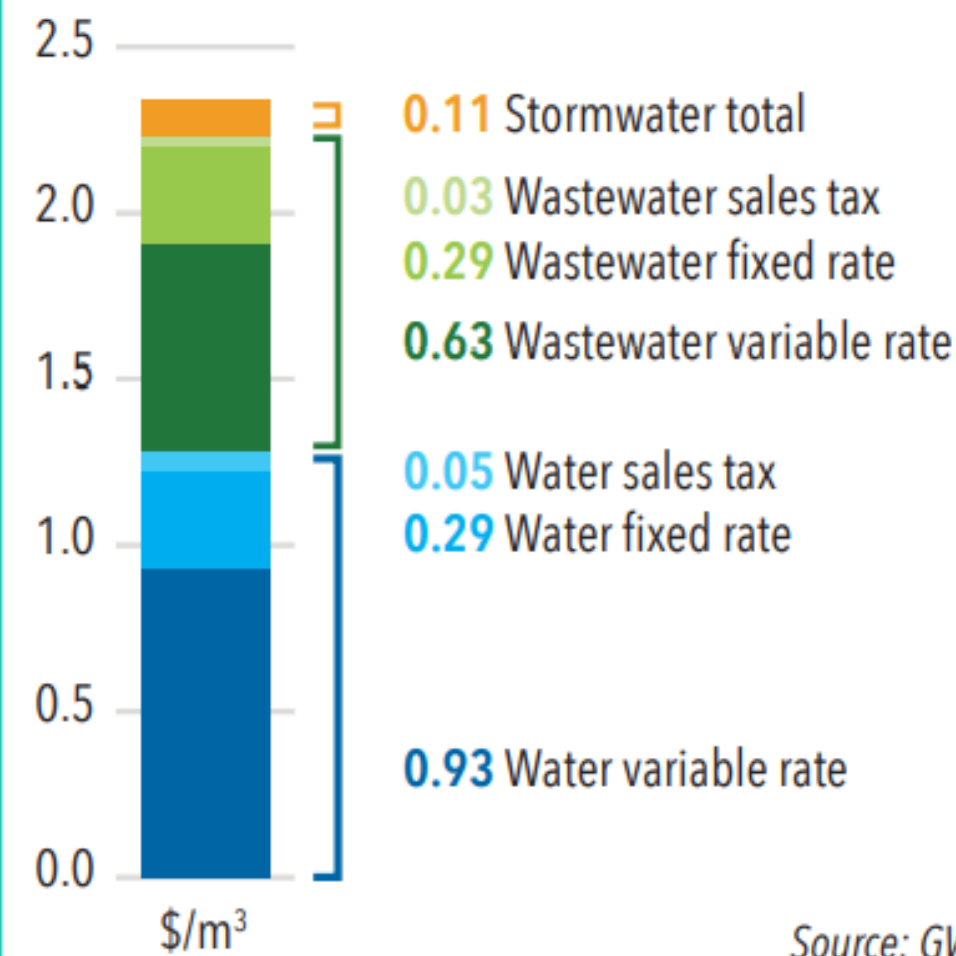
Summarizing the table when adding the fixed, variable and tax costs, it is obtained that at the global level the costs of drinking water and collection and treatment of wastewater, and rainwater collection including taxes are:

- Drinking water: 1.27 USD/M³
- Wastewater: 0.95 USD/M³
- Rainwater: 0.11 USD/M³



WHAT'S IN A TARIFF?

How do the seven possible components fit into the average global tariff in 2021?



Tariffs Benchmark

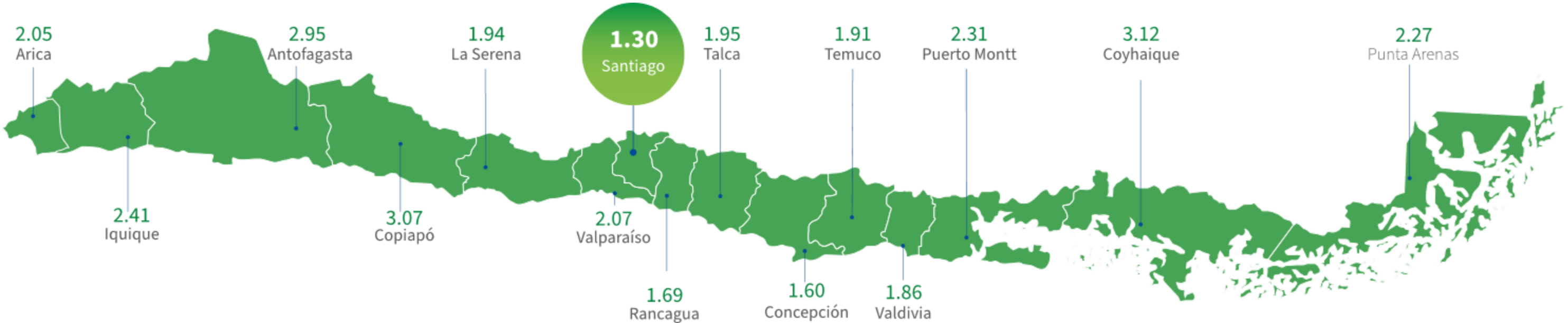


Chart with tariffs of capitals or main cities of OECD countries*.

Tariff based on a consumption of 15m³/month (in US\$/month)

Source: Water Tariff Survey, 2021 edition conducted by GWI.

