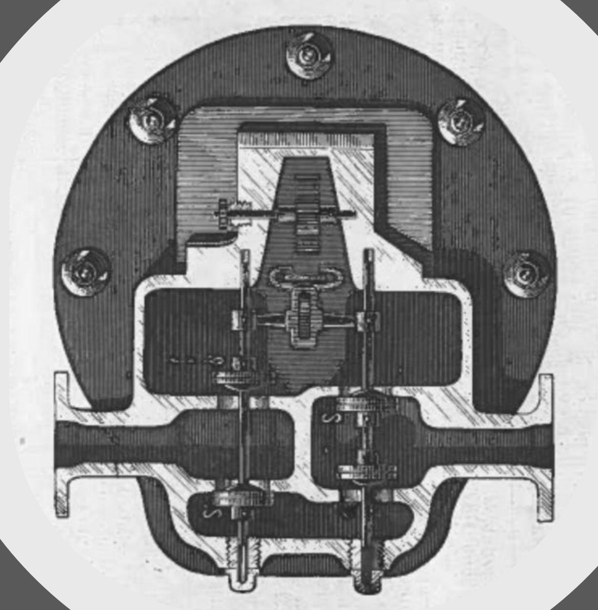
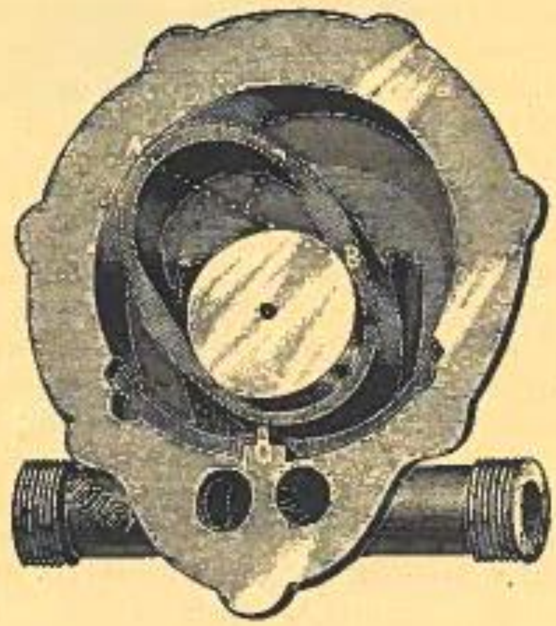


PORTUGUESE
WATER SUPPLY AND SANITATION

OUTLOOK 2026

Defining Future Options

Contents



Country Background

Portugal lies in Western Europe and has 10.6 million inhabitants, of which approximately half are economically active. The population is concentrated in coastal areas, with Lisbon and Porto having the highest population density, followed by the Algarve region in the south.

Portuguese voters elect central government (President and Parliament) and local government (comprised by 278 municipalities in the mainland). The Azores and Madeira archipelagos enjoy regional autonomy and these 11 islands comprise an additional 30 municipalities. For some policy purposes, the mainland is divided into five planning regions.

Portugal became a member of the European Economic Community, subsequently the European Union (EU), in 1986.

Water service provision at the time was unsatisfactory and wastewater treatment limited. Portugal adopted the EU Drinking Water Directive of 1998, the EU Urban Wastewater Treatment Directive of 1991, and the Water Framework Directive of 2000. As a result, the country introduced significant reforms (1993-1995) and investment to meet the EU standards. Nowadays, tap water is universally safe (99%) and public network coverage reaches 96% for water and 87% for sanitation, the remaining being private solutions (borewells and septic tanks).

Portugal

Area:	92.226 km^2
Population:	10,6 million
Unemployment:	6,5%
Inflation rate:	2,6 %
GDP per capita:	€ 25.227

Average Temperature: 7.5ºC - 22ºC
Average Rainfall: 958,4 mm/year
Water Exploitation Index+: 10,09%
Hydrographic Regions (mainland): 8
Shared basins with Spain: 4

Data: 2023, except for inflation (July 2025)

Portuguese Water Market Overview

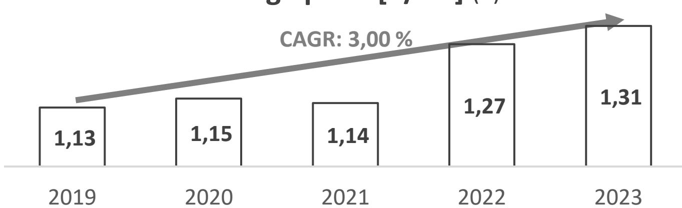
DEFINING FUTURE OPTIONS

Annual turnover	Average price to households(*)	# Utilities
€ 1,8 billion	2,32 €/m³	237

WATER

Network coverage	Safe drinking water	Non-revenue Water
96,4%	98,9%	26,9%

Average price [€/m³] (*)

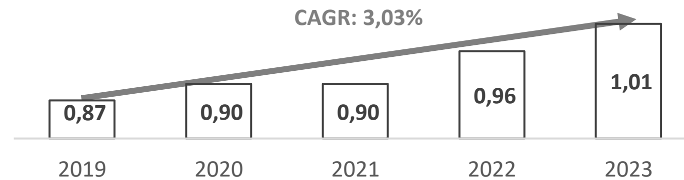


Annual water billed	618 M m³
Per capita total consumption	197 liters/day
Per capita domestic consumption	131 liters/day

SANITATION

Network coverage	Treatment plant capacity used	Compliance with discharge licenses
87,2%	91,1%	95,6%

Average price [€/m³] (*)



Annual wastewater collected	698 M m³
Annual wastewater billed	495 M m³
Annual sludge production	569 k tons

(*) For a consumption of 10m³ per month; Data: 2023, except where indicated otherwise

Institutional Framework

Sector Organization

DEFINING FUTURE OPTIONS

The WSS sector is mainly split between "bulk" systems (regional water catchment and treatment, and wastewater treatment and conveyance, covering 80% of the population) and "retail" systems (water distribution, wastewater collection and customer relationship).

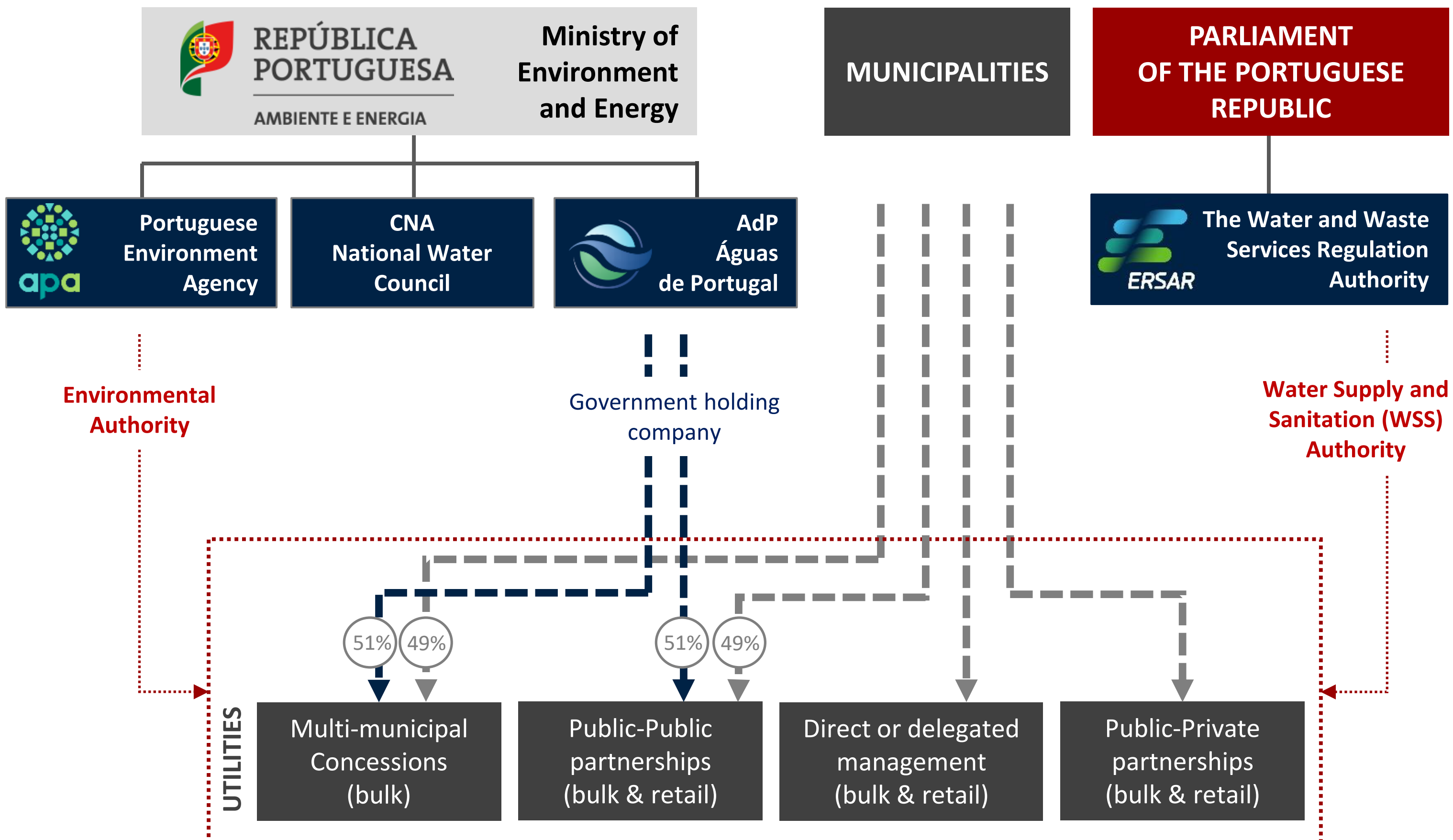
Water Supply | Sanitation

Bulk | Retail | Retail | Bulk

Municipalities are responsible for the provision of water and wastewater services. They can manage them directly; delegate them in municipal companies; enter into a partnership with the central government through AdP – Águas de Portugal (a State-Owned-Enterprise).

The municipalities can also award PPP concessions to private operators or establish joint (mixed economy) companies, although retaining a majority share.

AdP (with a majority share) can enter into partnerships with the municipalities in both "bulk" and "retail" systems.



Institutional Framework
Management Models

Municipalities are free to choose their management model. They can do it solely or in partnership

MUNICIPALITIES

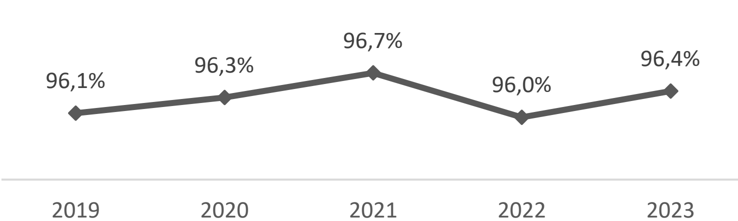
	MANAGEMENT MODEL	KEY FEATURES	# UTILITIES	AVERAGE ANNUAL REVENUES [Water supply & Sanitation]
Full municipal control	Direct municipal management	The most common model in Portugal for retail services	143	3,2 m€
Full municipal control	Municipal Services (SMAS)	Administratively, financially and technically autonomous municipal services but legally dependent from the municipality	22	22,5 m€
Full municipal control	Municipal Company (EM)	Autonomous company formed by one or more municipalities	22	14,6 m€
With Partners	Multi-municipal Concessions	51% State | 49% Municipalities The Portuguese government through AdP create concessions/partnerships by government act	9	57,2 m€
With Partners	Public-Public partnerships		4	32,6 m€
With Partners	Public-Private Partnerships (PPP) – Concessions	Concessions (or lease contracts) awarded typically for a 20-30-year period	27	11,2 m€
With Partners	Public-Private Partnerships (PPP) – Joint Companies	Municipal Companies, but where the private sector can own only up to 49% of equity	9	11,5 m€

Note: EPAL supplies the greater Lisbon region and is fully owned by the central Government through AdP-Águas de Portugal (this is the only utility that does not belong to the municipalities due to historical reasons); **EPAL is not represented in this figure** | *Data: 2023*

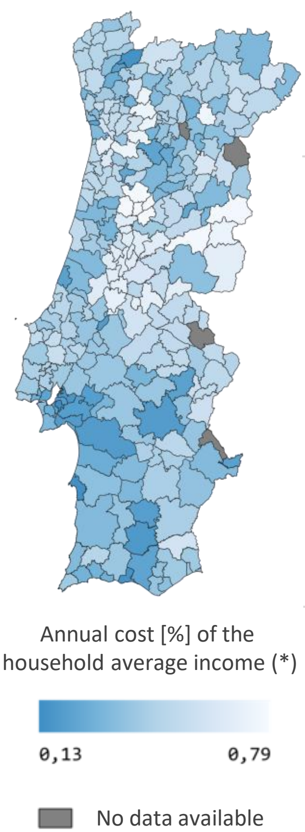
Market Performance
Water

Overall water services' performance is good, but costs are still higher than revenues in 105 water utilities (mostly municipal services). Performance in 2020-21 may be affected by the Covid 19 policies and confinement

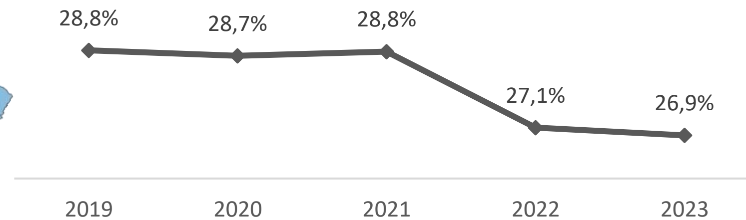
Water Network Coverage (%)



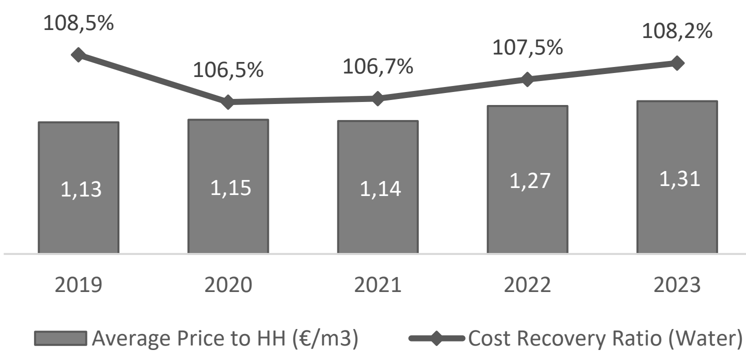
Affordability



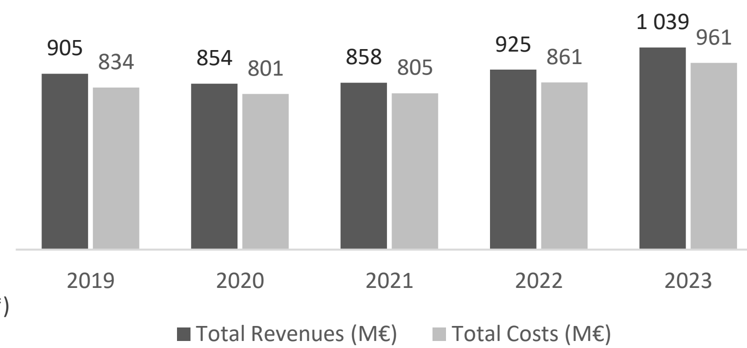
Non-Revenue Water (%)



Average Price & Cost Recovery



Total Revenues and Total Costs**



(*) For a consumption of 10m3 per month; (**) Assessed at retail level

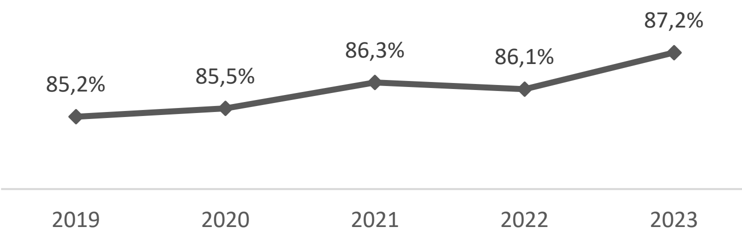
Data: 2023

Market Performance

Sanitation

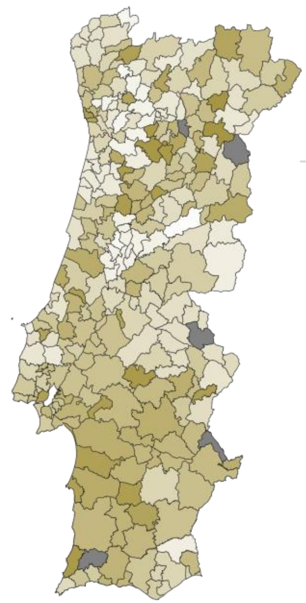
Wastewater services are improving steadily, although cost recover ratio “dropped” to pre-pandemic trend. Costs are still higher than revenues in 132 wastewater utilities (mostly municipal services)

Wastewater Network Coverage (%)



Defined as access to wastewater collection and treatment vi public networks

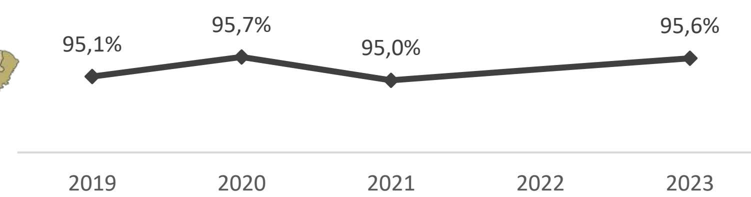
Affordability



Annual cost [%] of the household average income (*)

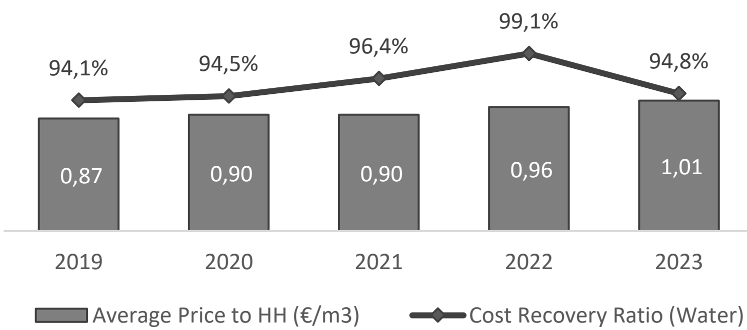
No data available

Wastewater discharge license compliance(%)

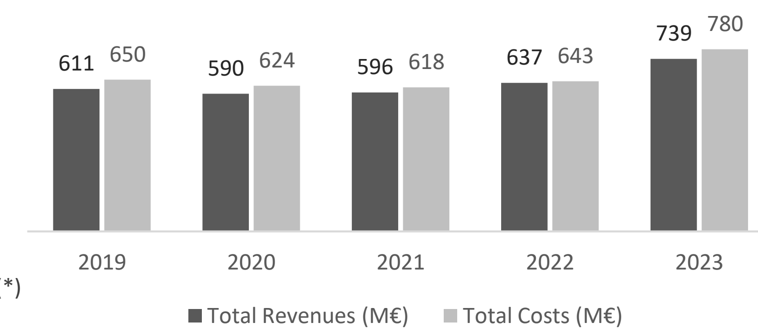


There is no available data for 2022

Average Price * & Cost Recovery



Total Revenues and Total Costs **



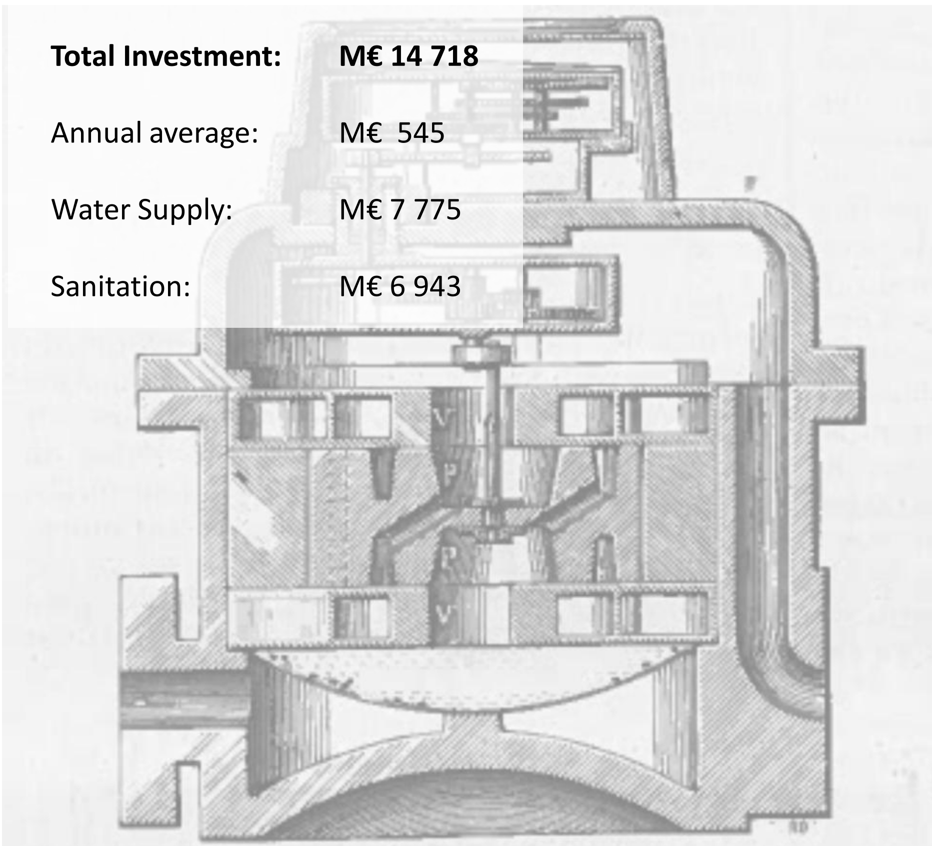
(*) For a consumption of 10m³ per month; (**) Assessed at retail level

Data: 2023

Capital Investment

Significant investment was made in the form of blended finance
The accumulated capital investment, for the 1993-2020 period, amounts to € 14,7 billion

Accumulated Capital Expenditure [1993-2020]



Total Investment:	**M€ 14 718**
Annual average:	M€ 545
Water Supply:	M€ 7 775
Sanitation:	M€ 6 943

Funding Sources [accumulated 1993-2020]

European Union grants	M€ 6 520
European Investment Bank	M€ 2 880
Bonds – Private Placement	M€ 600
PPPs	M€ 1 200
Other (*)	M€ 3 518

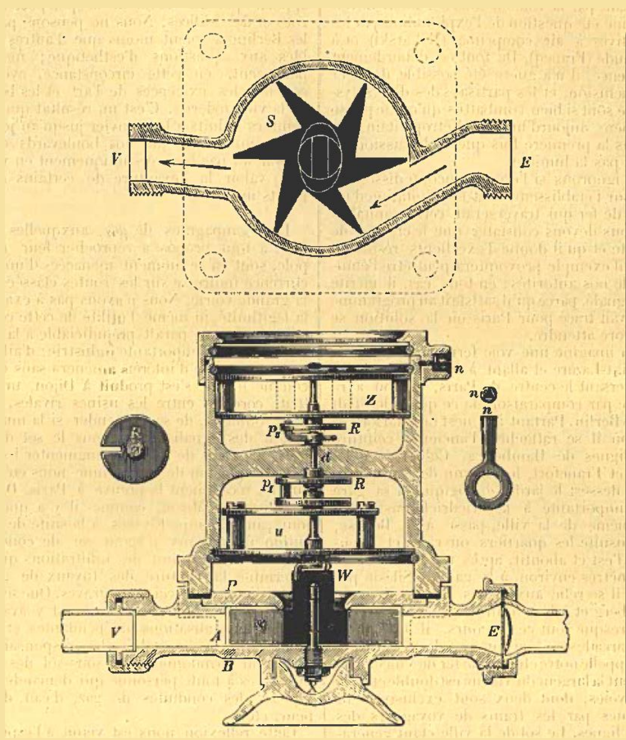
(*) The remaining financial needs came from commercial loans, utilities self cash-flow and subsidies from taxes

Blended finance

The bulk systems were mostly financed through EU grants, EIB, commercial loans, private bonds and self cash-flow; the public retail systems were mostly financed through EU grants, commercial loans and subsidies from taxes (in the situations where there is no full cost recovery). Private concessions are mostly financed through commercial loans, private equity and self cash-flow.

Existing Infrastructure

Capital investment in bulk systems and in network extension is practically concluded, and a significant part of the assets are within their lifetime limits. Nevertheless, the pace of renewal has been insufficient and strong investment is needed in the upcoming years



WATER

Water catchment
255 water reservoir intakes
5 886 underground intakes

Treatment
243 WTP
3 737 small WTP
1 250 chlorination stations

Pumping Stations
2 590

Storage
9 070 tanks

Mains & Networks
121 669 km

SANITATION

Sewer networks
67 909 km

Pumping Stations
7 014

Treatment
2 863 WWTP
1 450 community sceptic tanks
5 682 emergency dischargers

Disposal
22 submarine emissaries

Acronyms: WTP – Water Treatment Plant; WWTP – Wastewater Treatment Plant | Data: 2023

Tariffs

DEFINING FUTURE OPTIONS

Tariff setting is a municipal responsibility, but follows guidance by the national regulator
A recent Decree states that the Regulator will be able to enforce tariffs in utilities that do not comply with the law

TARIFF LEVELS AND STRUCTURE

WATER TARIFF (€/m^3)	
Average Multi-municipal Tariff	0,54
Average Tariff to Consumers	1,31

SANITATION TARIFF (€/m^3)	
Average Multi-municipal Tariff	0,57
Average Tariff to Consumers	1,01

TOTAL TARIFF TO CONSUMER	2,32

There is a wide variation in tariffs levels across the country, but the tariff structure usually includes a fixed charge and a volumetric charge based on an increasing block tariff.

ERSAR is drafting a Tariff Regulation to be applied at nationwide level.

SOCIAL TARIFFS

Establishing pro-poor tariffs is not mandatory for municipalities, although the majority already implemented them. There are many different schemes in force, and most of them are based on the following principles:

- Exemption or discount in the fixed tariff component
- The 2nd block of the volumetric tariff is charged at the price of the 1st block

Large families also benefit from discounts through adjustments to the block ranges

Social tariffs are financed by the municipal budget or by other utility customers (an implicit cross-subsidy)

# of municipalities with pro-poor tariffs in force

Water:	215
Sanitation:	203

CONNECTION FEES

Connections are compulsory for water and wastewater if the public network is within 20 metres of the household

The ERSAR 2009 recommendation mentioned that connections up to 20 meters should be exempt of fees – a successful measure that promoted many connections. Since 2018 this measure became mandatory.

Average tariff to Domestic Consumers for a monthly water consumption of 10m^3; Data: 2023

AdP – Águas de Portugal

The establishment of a State-owned company

DEFINING FUTURE OPTIONS

AdP is a State-Owned Enterprise held by the Ministry of Finance and overseen by the Ministry of Environment and Energy

AdP-Águas de Portugal was created in 1993 with a share capital subscribed through the incorporation of the existing Lisbon utility, EPAL. With more than 150 years (founded in 1868), EPAL supplies the greater Lisbon region and was already owned by the State (this is the only utility that does not belong to the municipalities due to historical reasons). EPAL provided financial capacity and skilled staff to the newly created AdP.

AdP is owned by the Ministry of Finance, through a public asset holding company (Parpublica) and the public bank (Caixa Geral de Depósitos).

The company's objective is to foster and promote universality, continuity and quality in water and wastewater services contributing, therefore, to the sustainability of the sector and the protection of environmental values.

The solution adopted to implement the multi-municipal systems involved the creation of regional public companies jointly held by AdP and Municipalities.

Águas de Portugal

100 %

EPAL

Min. 51% AdP
Max. 49 % Municipalities

- AdP - Águas de Portugal is the holding company for 13 aggregated regional utilities
- Lisbon utility, EPAL was integrated in AdP. EPAL provided share capital, financial and technical capacity to leverage AdP
- Nine Multi-municipal systems created in large urban areas (1st generation) and afterwards in low density population regions (2nd generation), plus three public-public partnerships

Acronyms: EPAL – Empresa Portuguesa das Águas Livres, SA.

AdP – Águas de Portugal
Key features

DEFINING FUTURE OPTIONS

AdP is the country's largest player in WSS, being responsible for supplying bulk water treatment services to about 80 percent of the population through multi-municipal companies, public partnerships and EPAL

Business

Population covered: 80%

Municipalities served: 234

Water produced: 633 M m^3/year

Wastewater treated: 571 M m^3/year

Financials (€ million, consolidated)

Revenues: 830,2

OPEX: 638,6

EBITDA: 375,7

Net Debt: 1 215,9

Net Profit: 102,7

Assets

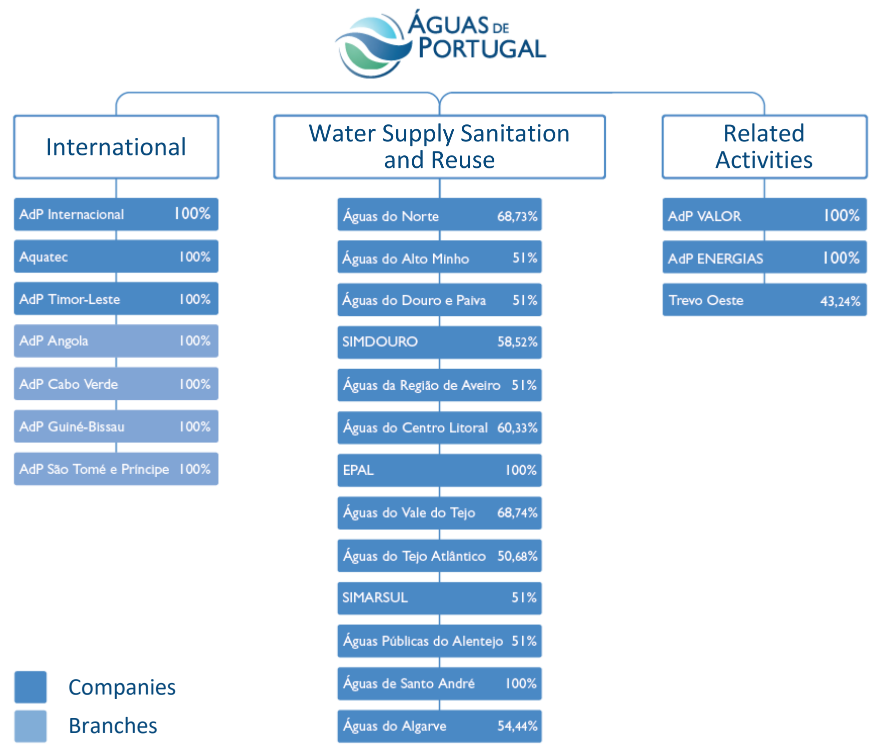
Water Treatment Plants: 117

Wastewater Treat. Plants: 1 034

Water mains & networks: 23 368 km

Sewers: 12 647km

Water tanks: 2 028



Acronyms: WSS – Water Supply and Sanitation| Data: 2024

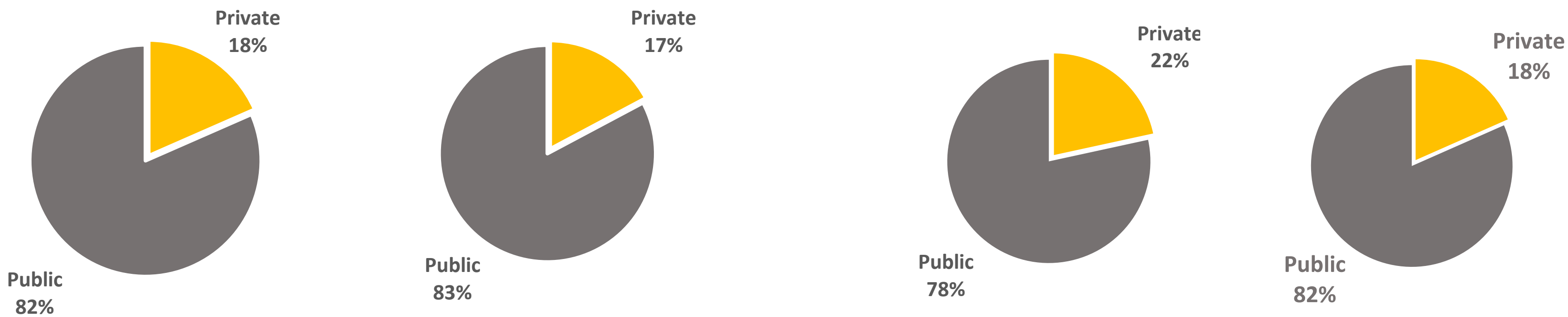
Private Sector Participation

DEFINING FUTURE OPTIONS

Five private operators are supplying water to 18% of the population in the Portuguese mainland

Private Market Share [retail services]

Population Served (1) [%]		Annual Turnover (2) [€]	
Water	Sanitation	Water	Sanitation



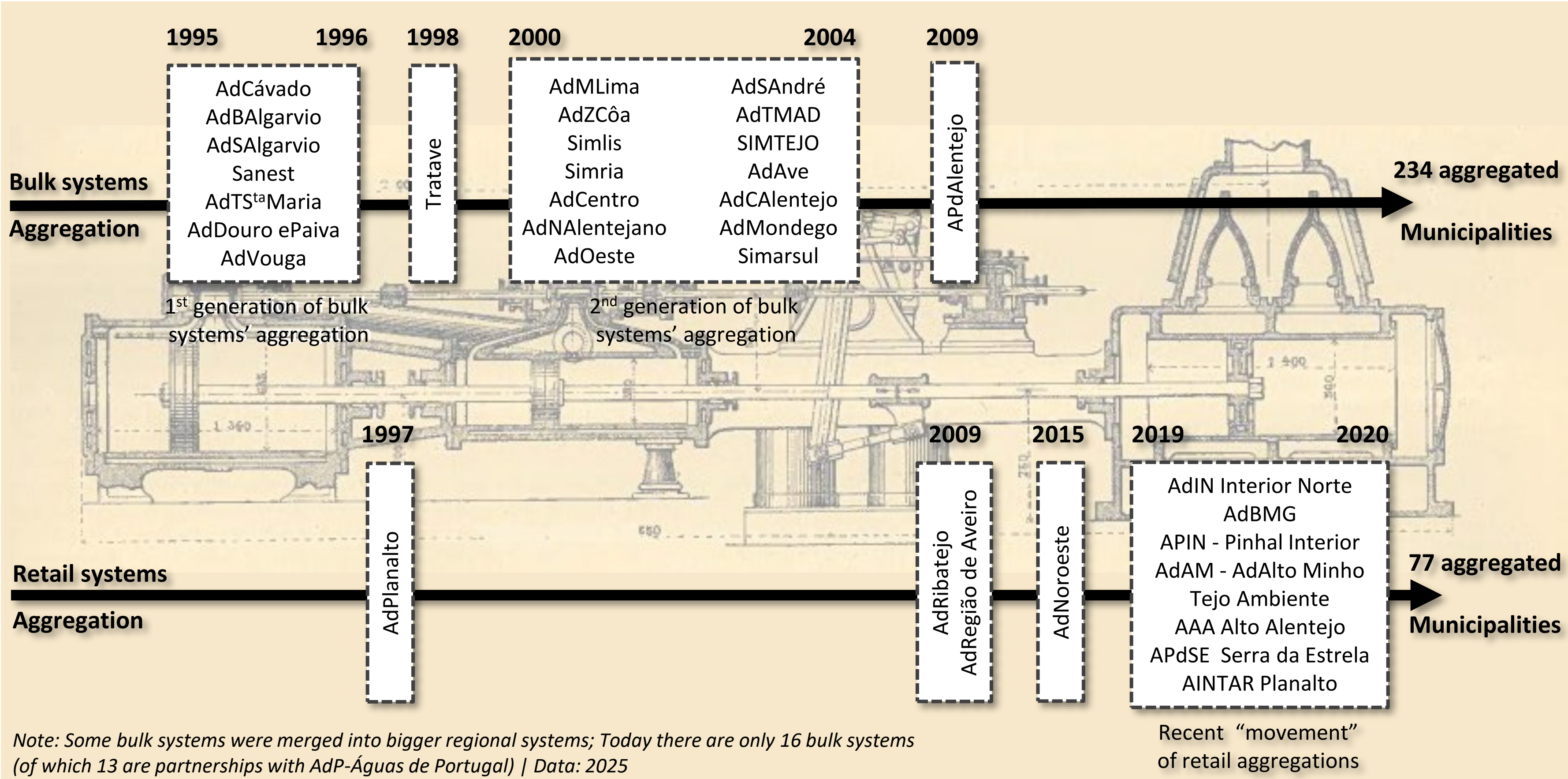
Private Operators

Shareholder	ANTIN Infrastructure Partners	Saur	Marubeni Corporation	BEWG 北控水务	FCC, ifm investors
Operator	INDAQUA	aquapor	AGS Water Solutions	BEWG PT	aqualia

Data: 2023

Aggregation of Utilities

Aggregation of bulk systems started in 1995, with the beginning of the reforms introduced in Portugal. Although a very limited number of retail system aggregations occurred in the past, a successful "movement" of aggregations kicked-off in 2019-2020



Note: Some bulk systems were merged into bigger regional systems; Today there are only 16 bulk systems (of which 13 are partnerships with AdP-Águas de Portugal) | Data: 2025

The Regulator

DEFINING FUTURE OPTIONS

The regulator evolved from a mere Observatory to an autonomous and politically independent Authority

1995 - National Observatory
for public and private concessions
(under Ministry for Environment)

1998

IRAR - Regulation Agency for
public and private concessions only
(under Ministry of Environment)

INSTITUTO REGULADOR DE ÁGUAS E RESÍDUOS

2004

IRAR - Regulation Agency
for public and private
concessions
and quality of water to all
Utilities
(under M. of Environment)

ERSAR

2009

ERSAR - Regulation Agency
<u>All</u> utilities' regulation and
quality of water
(under M. of Environment)

2014

ERSAR – Regulation Authority
All utilities' regulation and quality of water
(under Parliament)

2024

ERSAR - Regulation Authority
Tariff fixing for bulk services
Tariff setting for retail services
(under Parliament)

ERSAR

Regulatory Model

Structural Regulation	Utility Behavioral Regulation
Institutional Cooperation on public policies	Legal and contractual regulation
Monitor strategic plans' implementation	Economic regulation (Tariffs)
Clarify norms and rules	Quality of service regulation
Ensure the application of laws	Drinking water quality regulation
	Consumer compliance regulation

Collect Information
Disclose Information

Future Trends

International impact on Portuguese Multi-municipal systems

In response to the ongoing financial pressures from global events such as the COVID-19, the war in Ukraine, and inflationary tensions, the Portuguese government has established the tariffs and related financial values for 2024 concerning bulk systems. Decree-Law n. 77/2024 maintained the 2023 tariffs for various regional systems to ensure economic and operational stability. It also preserves certain tariff components and adjusts values based on the harmonized consumer price index.

ERSAR with enlarged powers

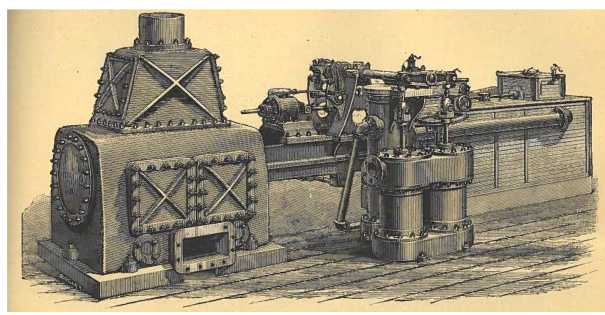
Decree-Law n. 77/2024 also restores ERSAR's authority to set tariffs for state-owned systems - a power previously removed by the 2021 State Budget Law. Additionally, the ERSAR statutes are updated to reinforce regulatory oversight, especially in cases of non-compliance by municipal systems. The law further revokes prior amendments and requires ERSAR to implement the new tariff setting rules to be applied from 2026 onward.

Impact of EU Directives in the Water Sector

The EU Drinking Water Directive n. 2020/2184 (DWD) sets rigorous quality standards for drinking water, requiring improved monitoring and access, which may involve upgrades in infrastructure and treatment facilities in Portugal.

The Urban Wastewater Treatment Directive n. 2024/3019 (UWWTD) introduces more demanding treatment levels to prevent pollution, which may require the remodelling of over 1/3 of the country's wastewater treatment plants.

These directives likely compel Utilities to increase tariffs to face investment and new operation costs. The DWD was transposed to Portugal by Decree-Law 69/2023, whereas the UWWTD must be transposed until June 2027.



Strategy Plans yet without secure financing sources

Approved in 2024, the National Water Supply, Sanitation and Rainwater Drainage Strategy Plan 2020-30 (PENSAARP 2023), estimates investment needs of 5.500 million euros, of which half should be allocated to infrastructure rehabilitation.

A broader Strategy Plan (including water resources, water supply, irrigation and energy production), called "Água que Une" is forecasting an additional 5.000 million euros (with about 1.000 million overlapping the two Plans), including the construction of 14 new dams and interventions in another 12 dams.

About 3,000 million in funding is secured, with the remaining financing sources yet to be determined.

We share Knowledge

WHO WE ARE

Founded in 2015, Defining Future Options, is a Portuguese investment, management and advisory company for the Water Sector.

Defining Future Options has a distinct offer: expertise that covers international political and strategical experience, public and private utility management experience, and engineering and economics background in the Water Sector.

Our Team members have two decades of experience in Executive Management of Utilities and PPPs, including transforming inefficient water services into highly professional and efficient water services.

WHERE WE ARE

In Portugal, we have worked with 75 Municipalities, the Regulator and Public and Private Sector Companies.

In Africa, we worked in Angola, Botswana and Mozambique and benchmarked over 10 southern African Regulators

We have developed market studies in more than 30 countries, in Europe, Africa, Asia Middle East and Latin America

WHAT WE DO

- ☑ Advising Governments, Municipalities, Regulators and Public and Private Water Utilities
- ☑ Establishing and reforming Water and Sanitation Utilities
- ☑ Advising PPP programs, procurement, bids, contract negotiations and transition phase
- ☑ Managing relationships and negotiations with Governments, Municipalities, Regulators, Private Operators, banks and non-governmental organizations
- ☑ Performing due diligence and developing strategies for risk allocation and investment valuation
- ☑ Staffing plans, capacity building and training

SOURCES USED TO PRODUCE THIS DOCUMENT

AdP – Águas de Portugal (www.adp.pt)

APA – Agência Portuguesa do Ambiente (www.apambiente.pt)

EIB – European Investment Bank (www.eib.org)

ERSAR – Entidade Reguladora dos Serviços de Águas e Resíduos (www.ersar.pt)

Eurostat (ec.europa.eu/eurostat)

Grupo de Apoio à Gestão do PENSAAR 2020 (www.apambiente.pt)

INE, Instituto Nacional de Estatística (www.ine.pt)

Pordata (www.pordata.pt/pt/estatísticas)

Portal do Clima, (www.portaldoclima.pt)

PENSAARP 2030

All analysis by Defining Future Options (www.definingfutureoptions.com)

IMAGE CREDITS

Cover: Water Meter - Jaquet System, Revue Industrielle, Imprimerie Chaix, 1882

Pg. 2: Water Meter - Hartford Meter C°, idem, 1883

Pg. 9: Water Meter – Couronne, idem, 1882

Pg. 10: Water Meter - Dreyer System, idem, 1882

Pg. 15 & 17: Steam Pump - Maxwell, idem, 1883

DISCLAIMER

Defining Future Options, Lda. as a member of the Portuguese Water Partnership (PWP), has kindly authorized the sharing of this document across PWP's network of national and international contacts and partners.

DEFINING FUTURE OPTIONS

LOOKING FORWARD TO THE NEXT 10 YEARS

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