



The situation of water and sanitation services in Portugal

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Outline

- Introduction
- Institutional framework for water management
- Water supply and sanitation statistical data
- Water and sanitation strategic planning

Introduction

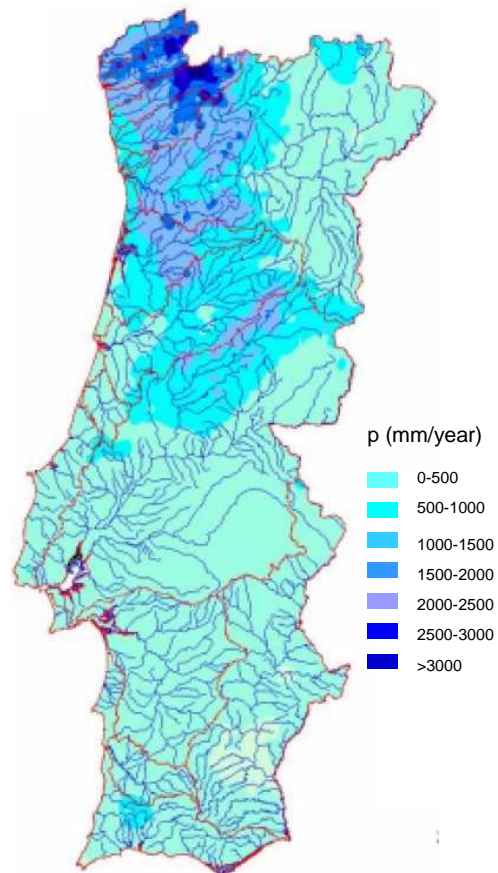
Climatic factors

- Orientation NW-SE of the most important mountainous system
- Temporal variability in annual precipitation distribution
- Dependence of flows from Spain in international river basins (five of the larger Portuguese rivers)
- Meteorological events (prolonged drought periods) can increase seasonal asymmetry of water availability

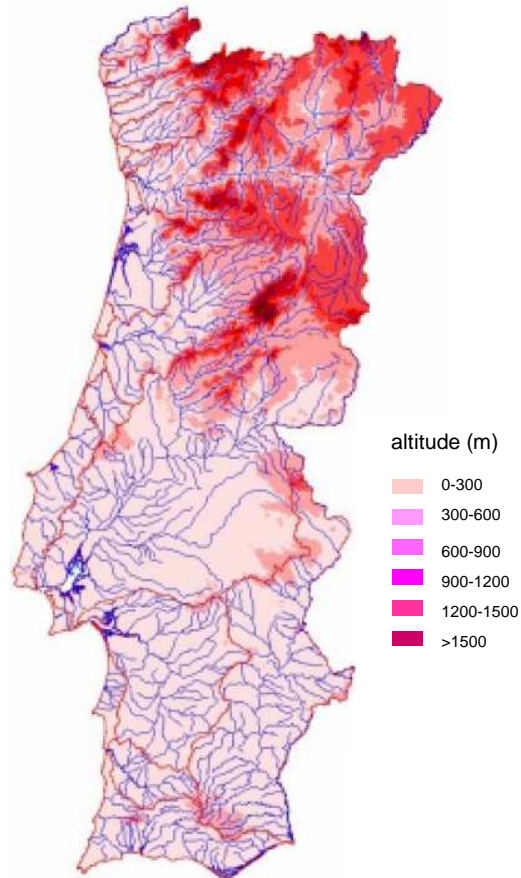


Introduction

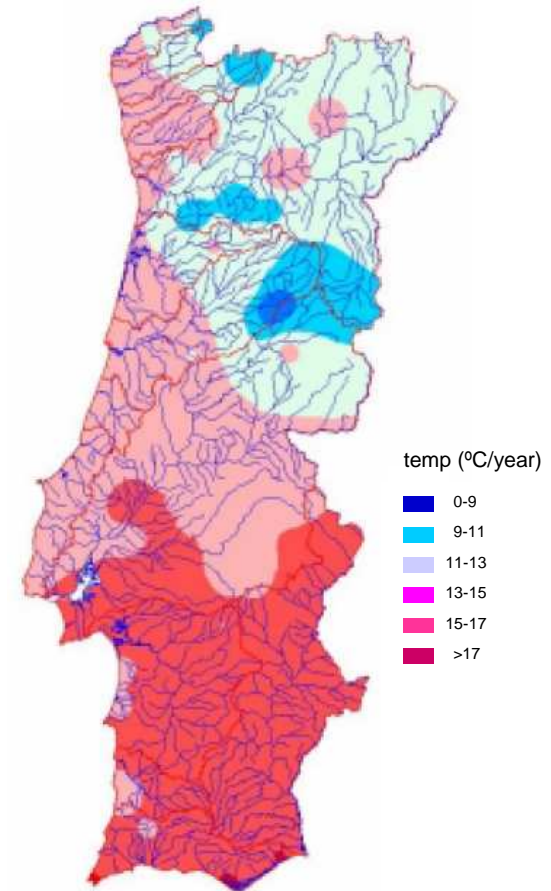
Climatic factors



rainfall



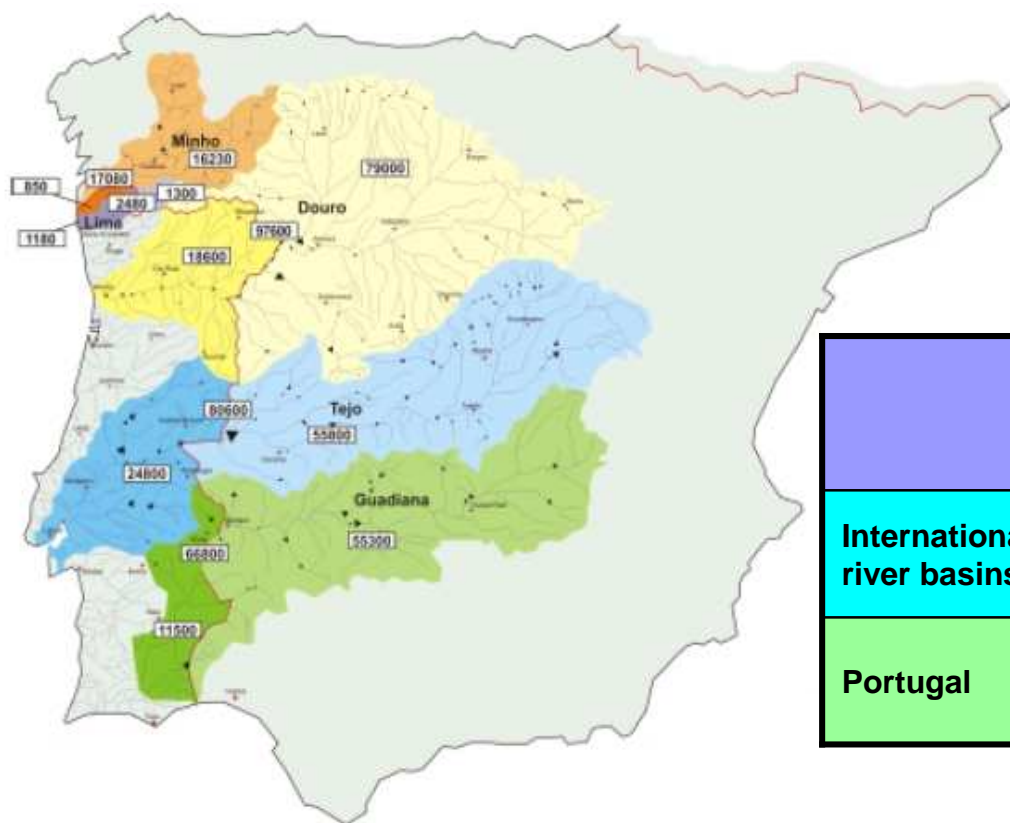
hypsometry



average annual temperature

Introduction

Portuguese international river basins



	Territory		Water availability	
	km ²	%	hm ³	%
International river basins	56.930	64	24.500	67
Portugal	88.900	100	36.570	100



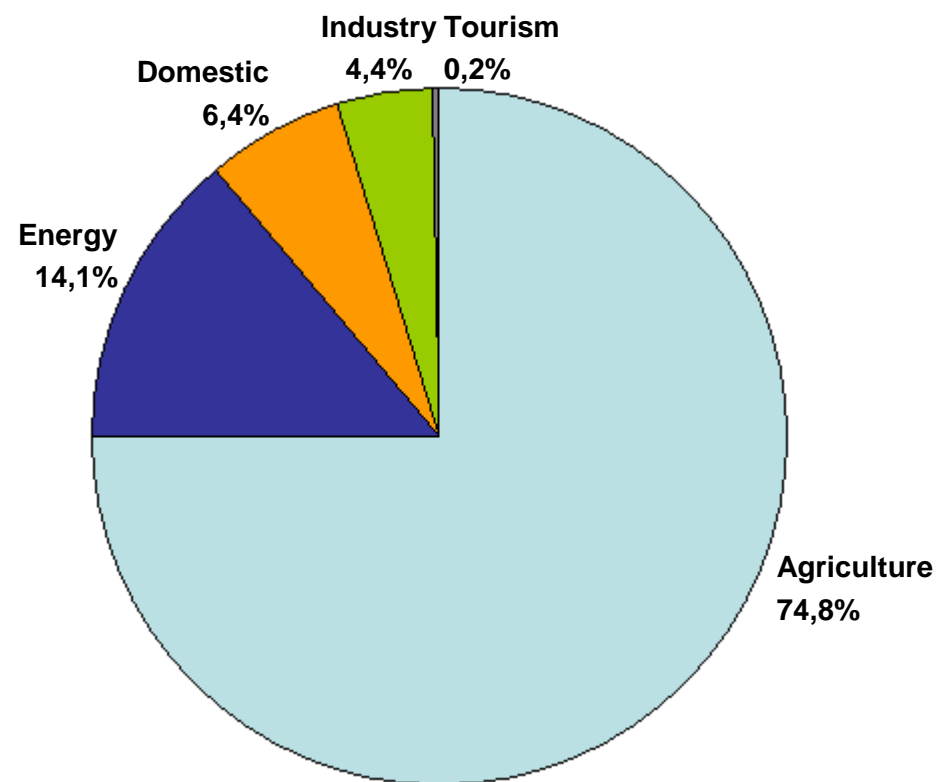
Introduction

Climate change scenarios

- increase seasonal asymmetry of water availability
- Continuous reduction of agricultural and forest areas
- Water demand pressure, with decrease of aquifer natural recharge

Introduction

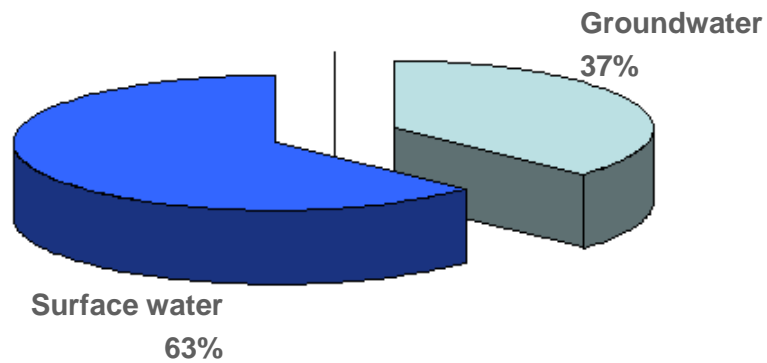
Water uses



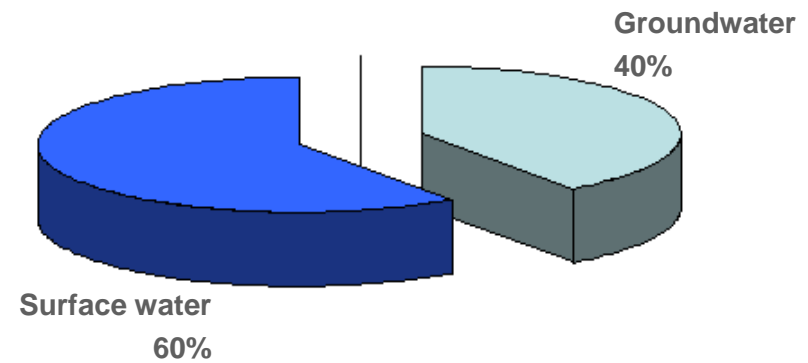
Introduction

Drinking water sources

Population served

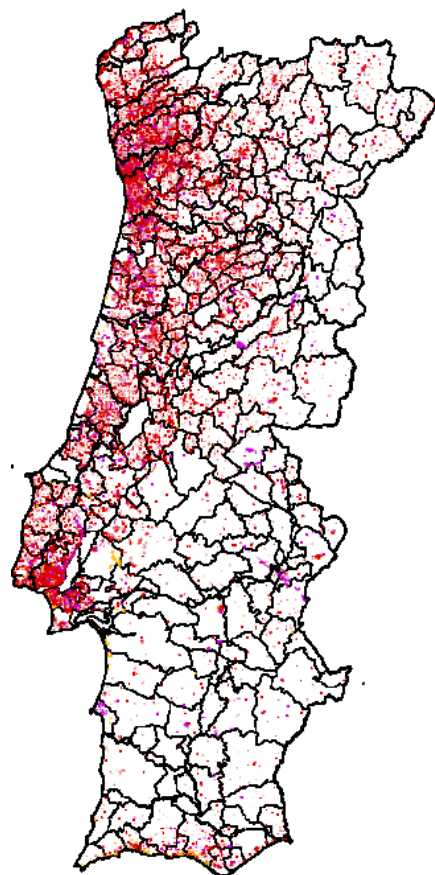


Water consumption

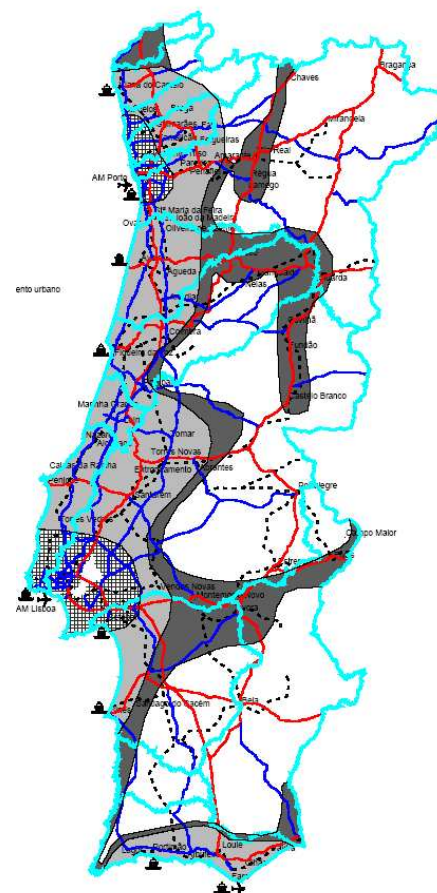


Introduction

Territorial planning



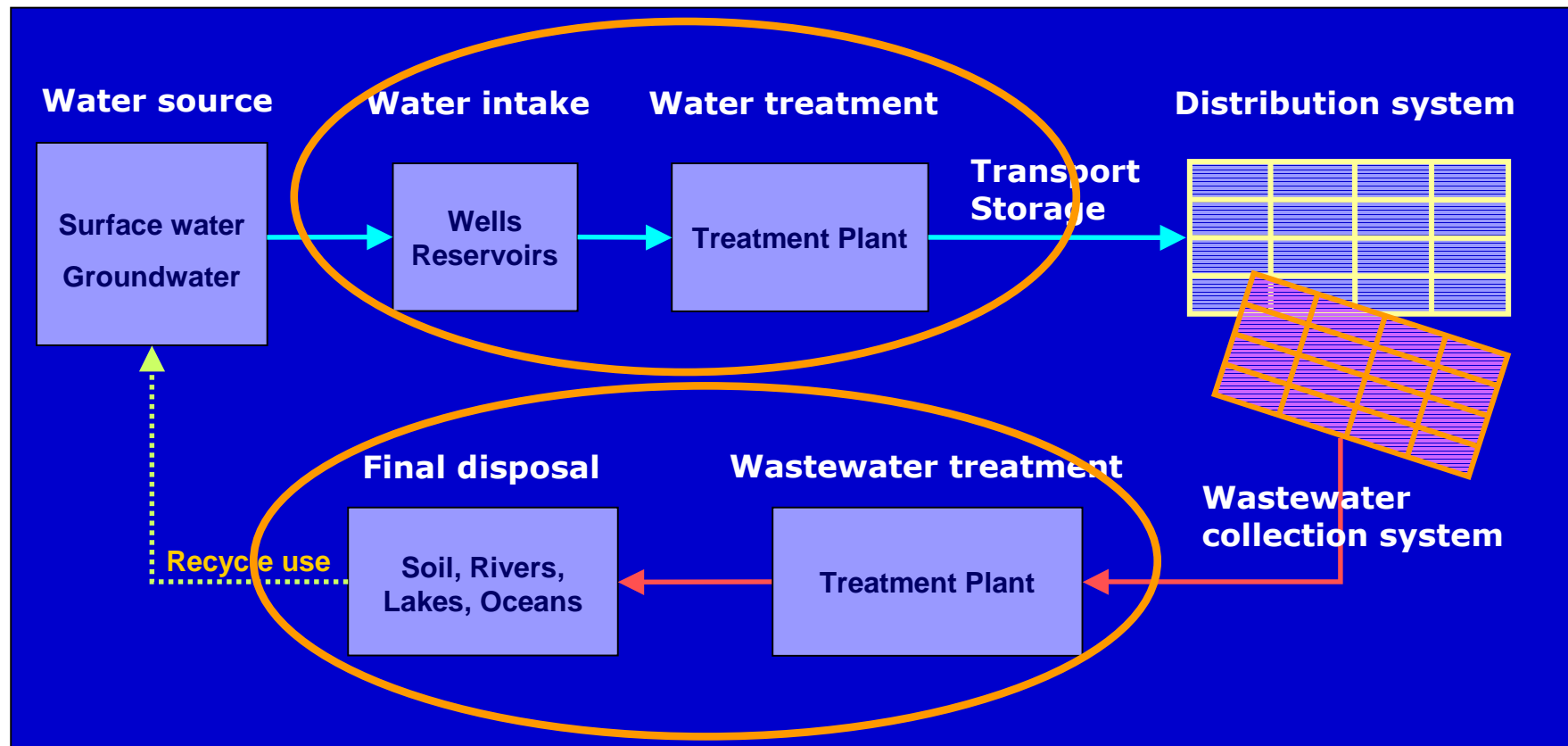
urban spaces



urban net of communications

Institutional framework

Integrated urban water cycle management





Institutional framework

Water and sanitation management model(s)

- ❖ Drinking water supply, wastewater collection and treatment, and stormwater are **constitutional attributions** of the Portuguese local Municipalities

- ❖ Subsystems of urban water cycle not directly in contact with consumers:
 - **Plurimunicipal** systems
 - **Municipal** systems

- ❖ Subsystems of urban water cycle directly in contact with consumers:
 - **Municipal** systems
 - **Independent public micro-systems**



Institutional framework

Water and sanitation management model(s)

❖ **Plurimunicipal** systems:

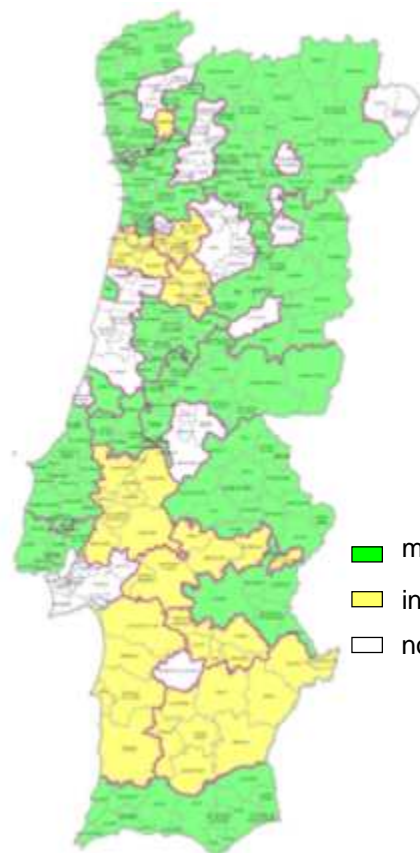
- Multimunicipal systems
(public companies with capital shared by the State and the Municipalities)
- Integrated municipal systems
(public companies with exclusive participation of Municipalities)

❖ **Municipal** systems:

- Municipal Technical Services
- Autonomous Technical Services
- Municipally-owned companies
- Private companies concession

Institutional framework

Systems territorial integration



- multi-municipal systems
- integrated municipal systems
- non-integrated municipal systems

Water supply systems



- multi-municipal systems
- integrated municipal systems
- non-integrated municipal systems

Wastewater systems

Institutional framework

Systems territorial integration

Water supply

Water treatment and storage systems	Municipalities		Population	
	Number	%	10 ³ inh.	%
Multi-municipal	180	65	7.025	72
Integrated municipal	50	18	1.033	11
Municipal	48	17	1.058	17
Mainland Portugal	278	100	9.700	100

Distribution systems	Municipalities	
	Number	%
Municipal authorities	243	87
Municipally-owned companies	9	3
Private concessions	26	10
Mainland Portugal	278	100

Institutional framework

Systems territorial integration

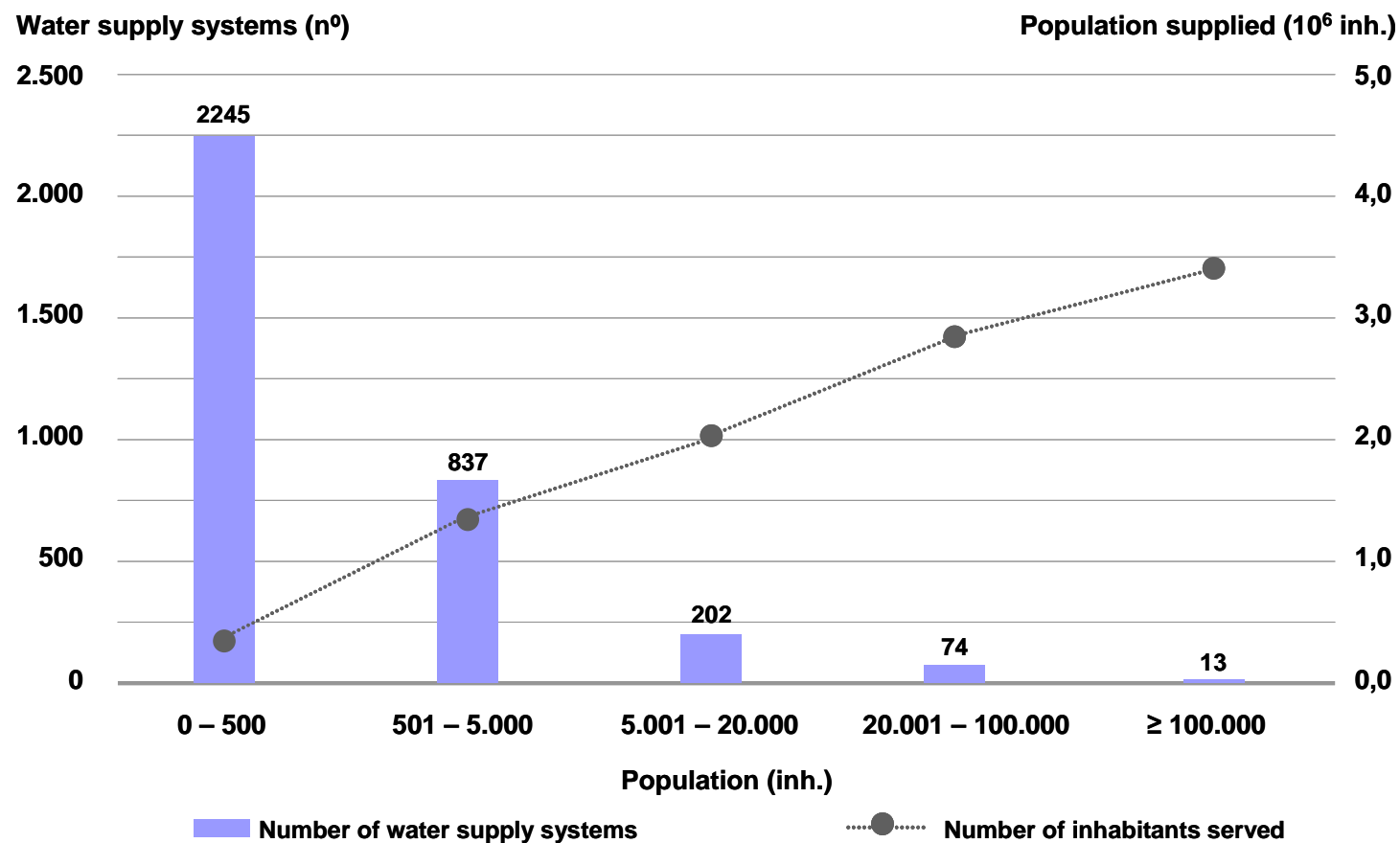
Sanitation

Wastewater treatment systems	Municipalities		Population	
	Number	%	10 ³ inh.	%
Multi-municipal	178	64	6.372	66
Integrated municipal	37	13	552	6
Municipal	63	23	1.058	28
Mainland Portugal	278	100	9.700	100

Collection systems	Municipalities	
	Number	%
Municipal authorities	255	92
Municipally-owned companies	9	3
Private concessions	14	5
Mainland Portugal	278	100

Statistical data

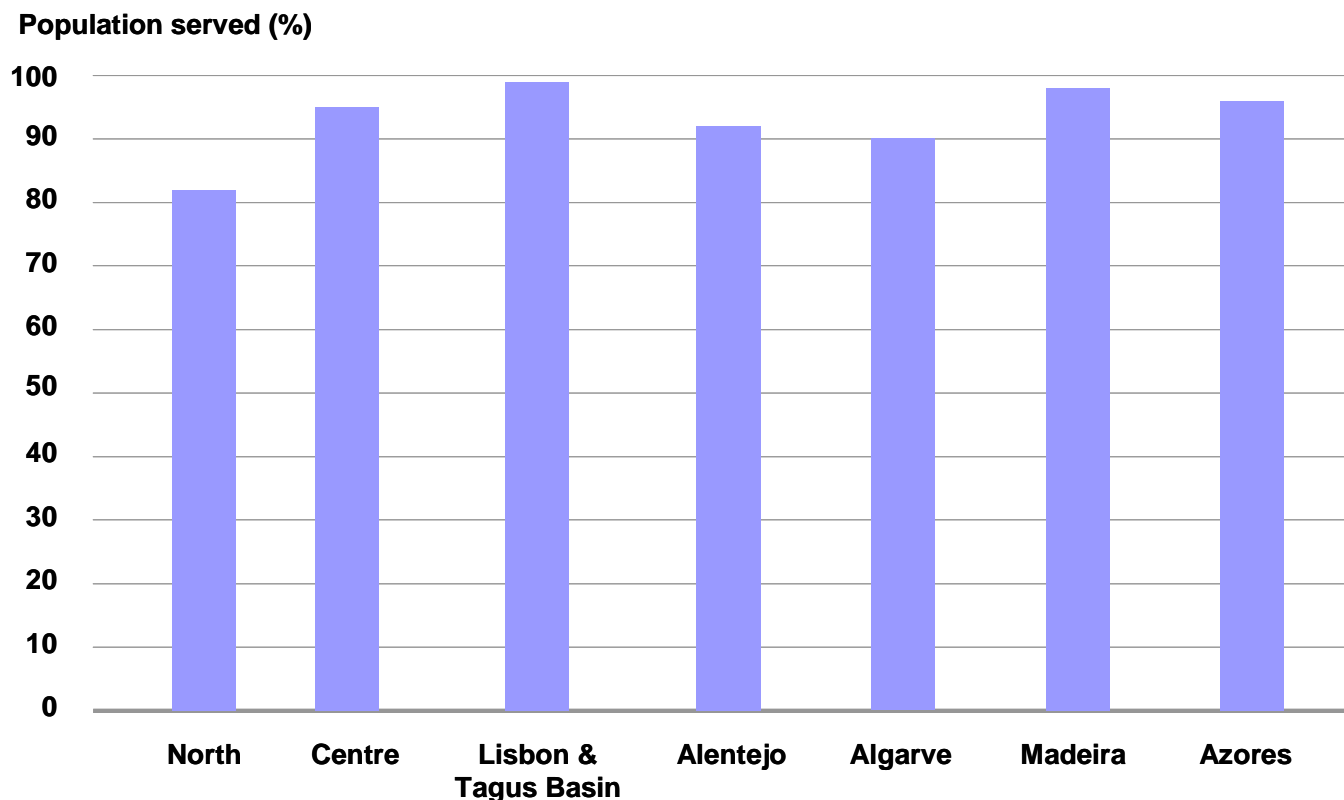
Size of water supply systems



Statistical data

Population served (2002)

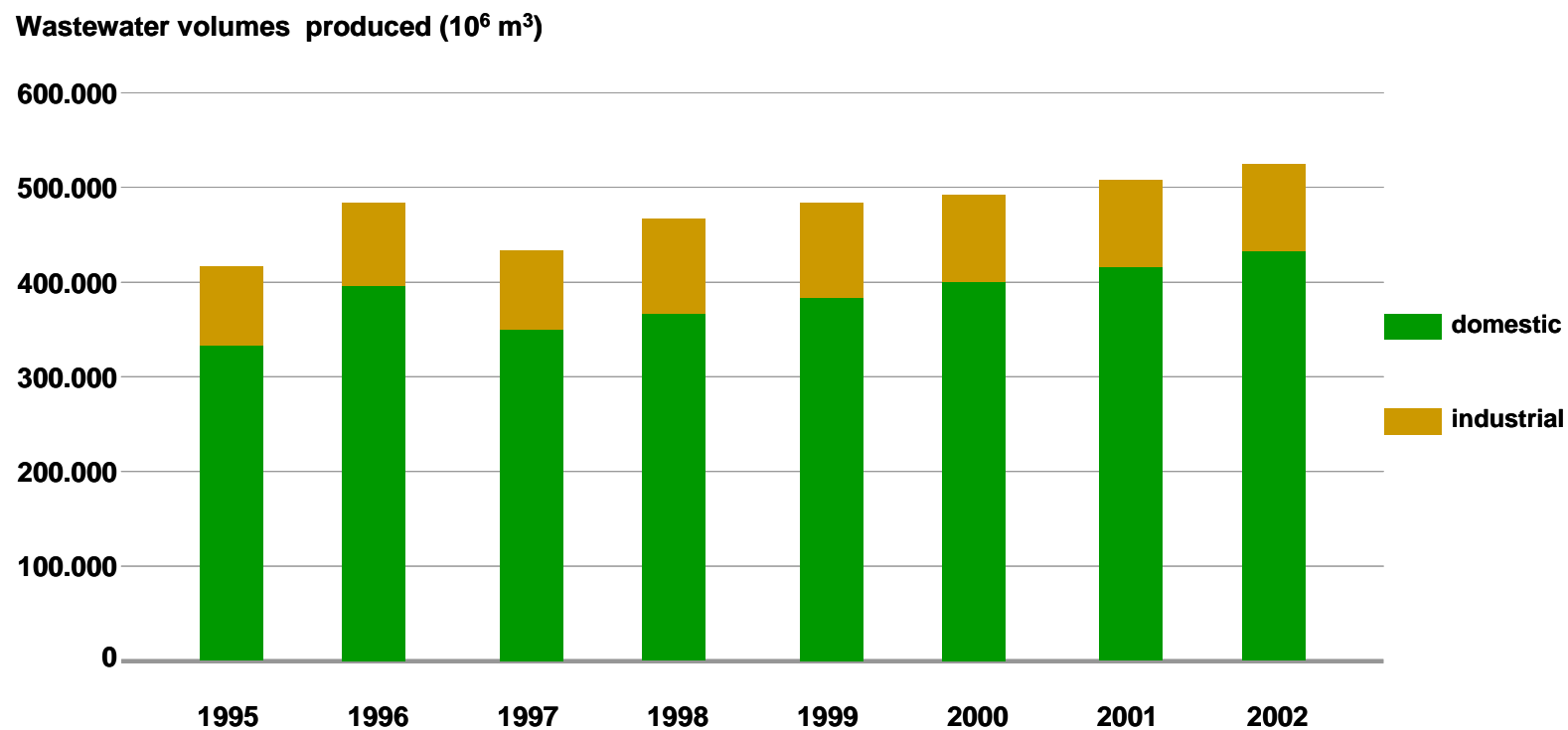
Water supply



Average (in 2006) – 93%

Statistical data

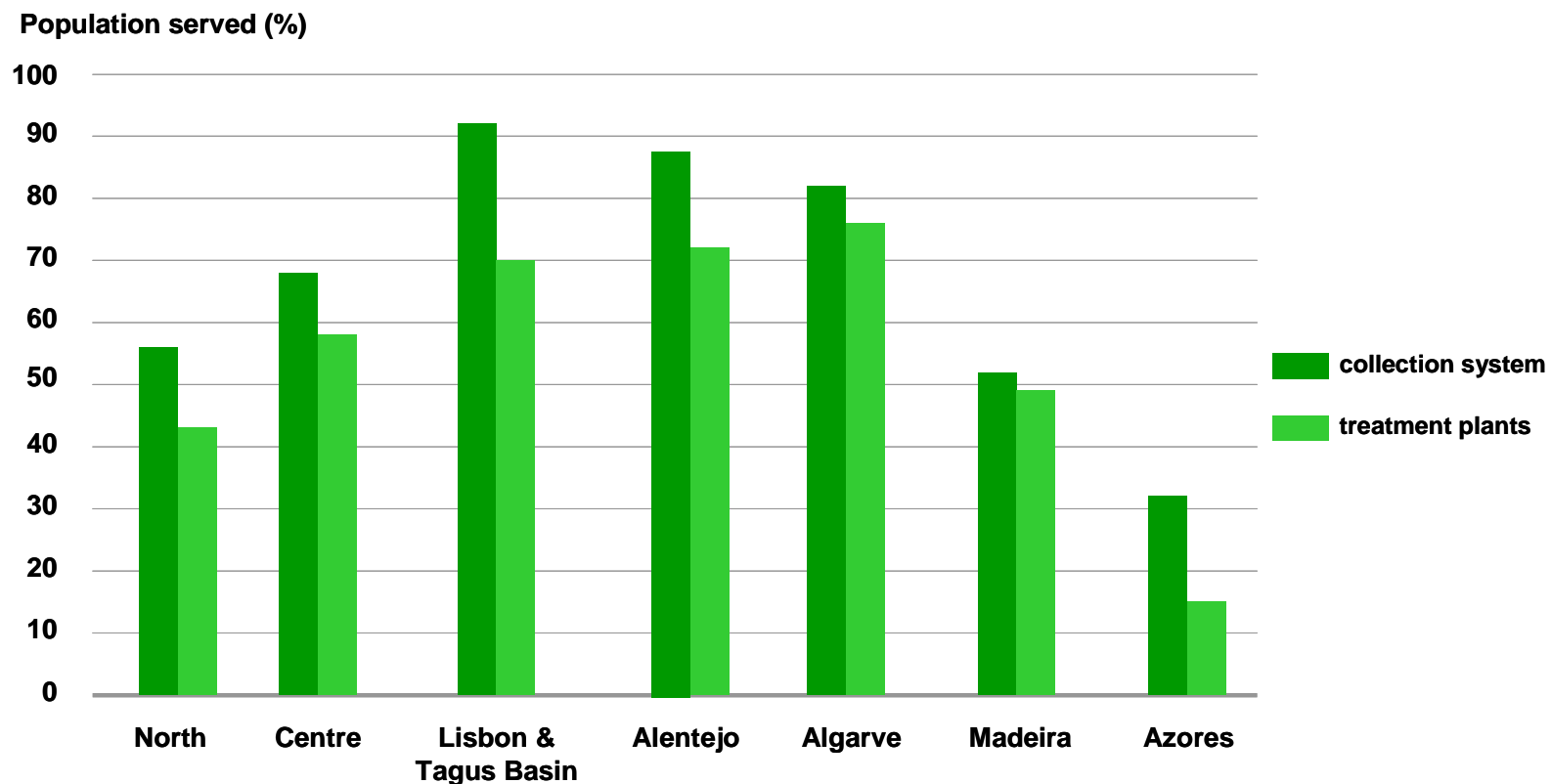
Wastewater produced



Statistical data

Population served (2002)

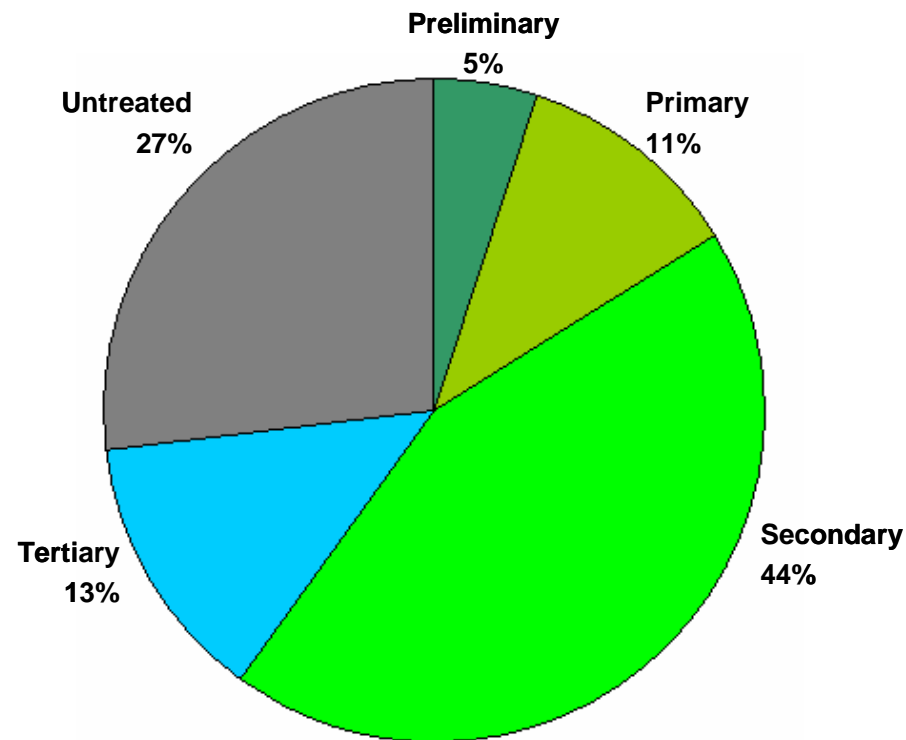
Sanitation



Average (in 2006) – 80%

Statistical data

Wastewater treatment technologies (2002)



Statistical data

Tariff systems

average values

Asset management model	Average tariff (Euro/m ³)		
	Water supply	Sanitation	Total
Municipal Technical Services	0,65	0,24	0,89
Autonomous Technical Services	0,92	0,33	1,25
Municipally-owned companies	0,75	0,36	1,11
Private companies concession	0,78	0,32	1,10
Average	0,77	0,29	1,06

Statistical data

Tariff systems

discrepancies

Tariff (Euro/m ³)	Number of Municipalities	
	Water supply	Sanitation
> 1,00	23	2
0,71 – 0,99	65	4
0,41 – 0,70	146	26
0,21 – 0,40	42	74
0,01 – 0,20	2	109
0	–	63
Total	278	278



Strategic planning

PEAASAR 2007-2013

Strategic Objectives:

- **Universality, continuity and quality of service**
- **Sustainability of assets**
- **Environmental values protection**



Strategic planning

PEAASAR 2007-2013

Operational Objectives:

- **Universality, continuity and quality of service**
 - Drinking water public services: **95%** of total inhabitants
 - Wastewater collection and treatment public services: **95%** of total inhabitants
 - Adequate quality level of services
 - Tariff systems considering the population economic capacity



Strategic planning

PEAASAR 2007-2013

Operational Objectives:

- **Sustainability of assets**

- Guarantee, in a reasonable time, the recovery of the total service costs
- Optimize the operational management and eliminate inefficiency costs
- Contribute for sustainable employment promotion by means of national and regional enterprises dynamics environment



Strategic planning

PEAASAR 2007-2013

Operational Objectives:

- **Environmental values protection**

- Comply with Portuguese and European environmental legislation
- Guarantee an integrated approach for pollution prevention and control
- Increase the productivity and competitiveness in water supply and sanitation promoting eco-efficient solutions

Strategic planning

PEAASAR 2007-2013

Investment plan:

Integrated systems

Asset management model	Investment (M€)		
	Water supply	Sanitation	Total
Multimunicipal – Works conclusion	50	60	110
Multimunicipal – Expansion to new Municipalities	130	265	395
Integrated Municipal – Systems conclusion	40	85	125
Complementary investments	100	70	170
Total	320	480	800

Strategic planning

PEAASAR 2007-2013

Investment plan:

Municipal systems

Region	Investment (M€)		
	Water supply	Sanitation	Total
North	384	654	1.039
Centre	131	317	447
Lisbon and Tagus River Basin	92	347	439
Alentejo	105	114	219
Algarve	31	45	75
Total	741	1.478	2.218