



# 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

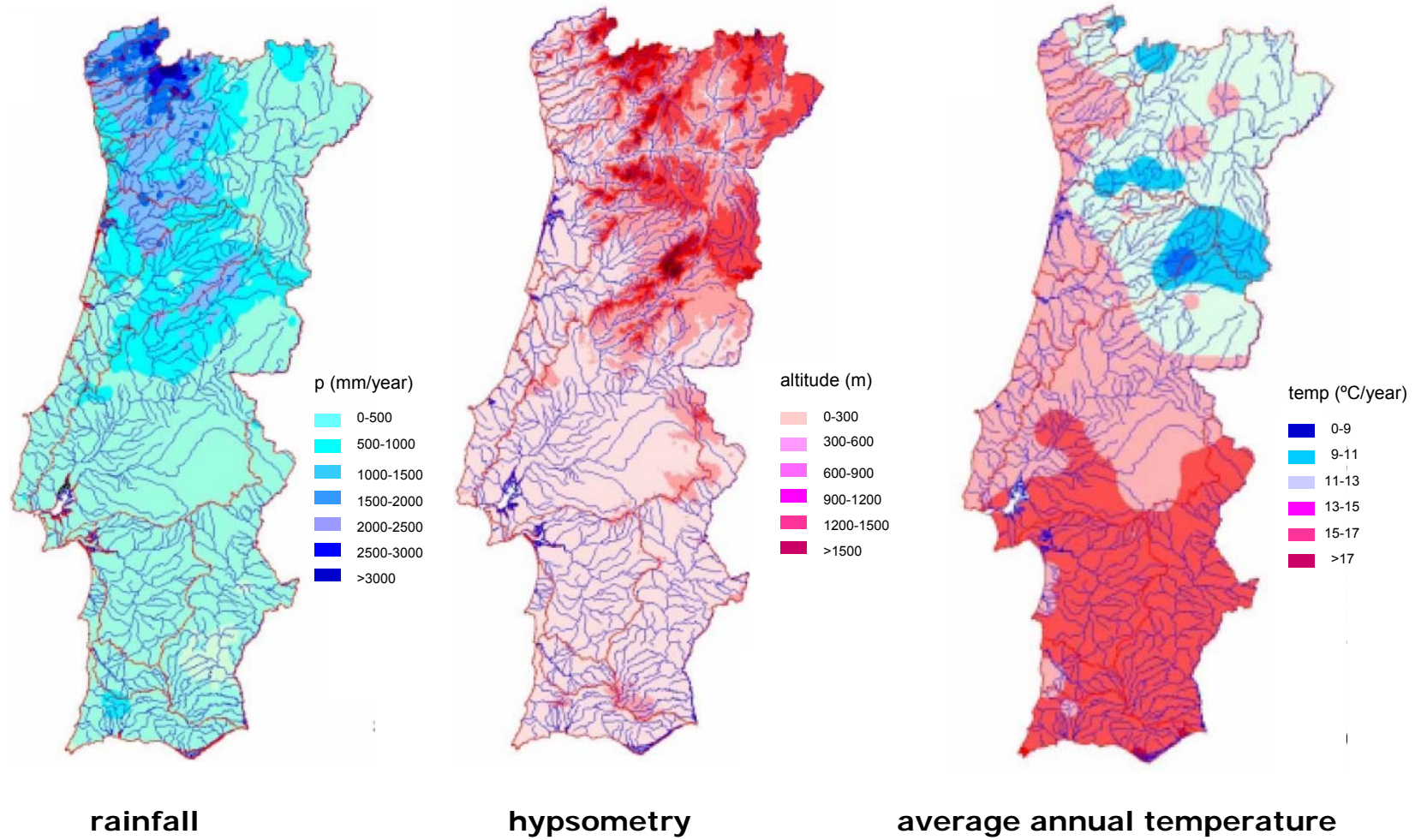
## Climatic factors

- 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



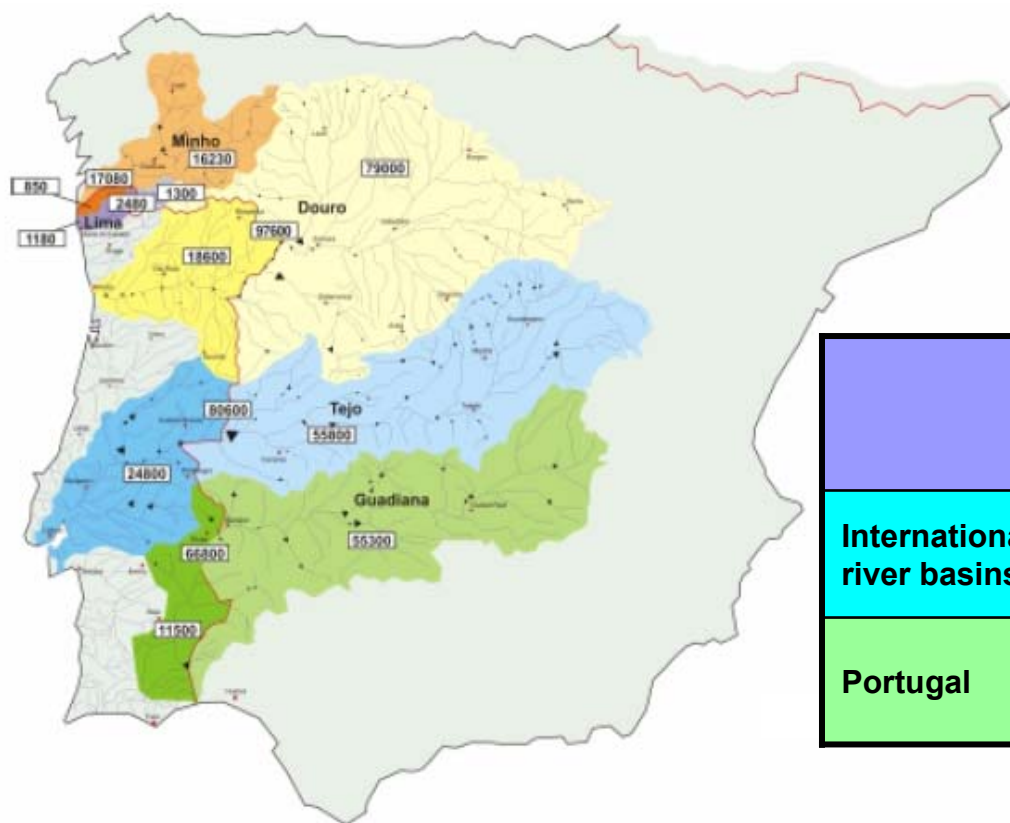
# Introduction

## Climatic factors



# Introduction

## Portuguese international river basins



	Territory		Water availability	
	km <sup>2</sup>	%	hm <sup>3</sup>	%
<b>International river basins</b>	56.930	64	24.500	67
<b>Portugal</b>	88.900	100	36.570	100



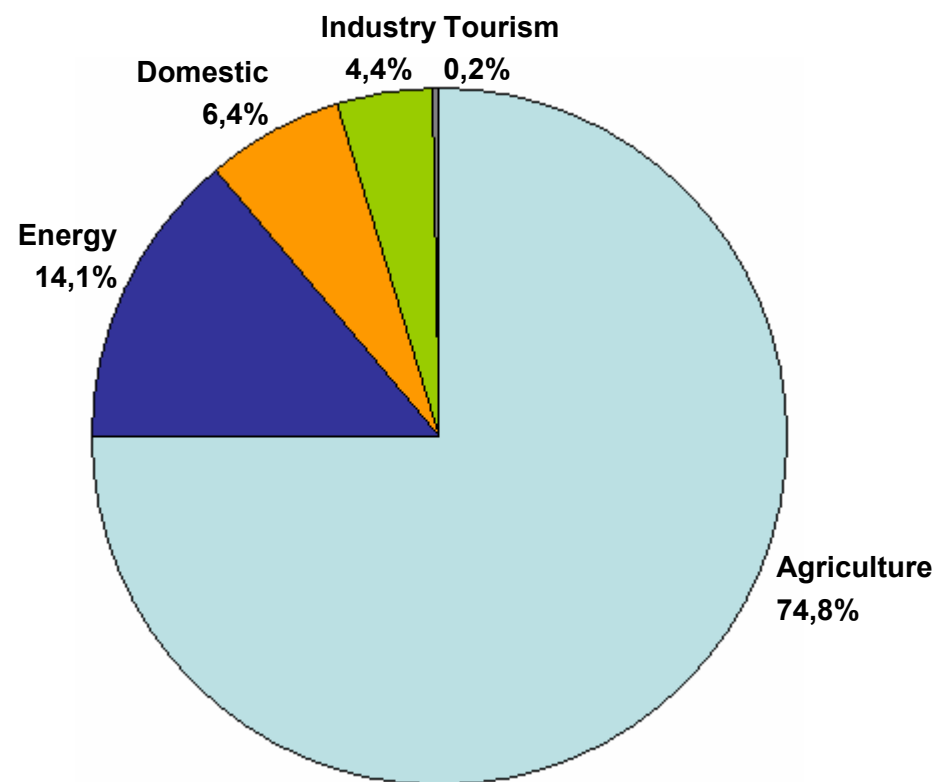
# Introduction

## 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

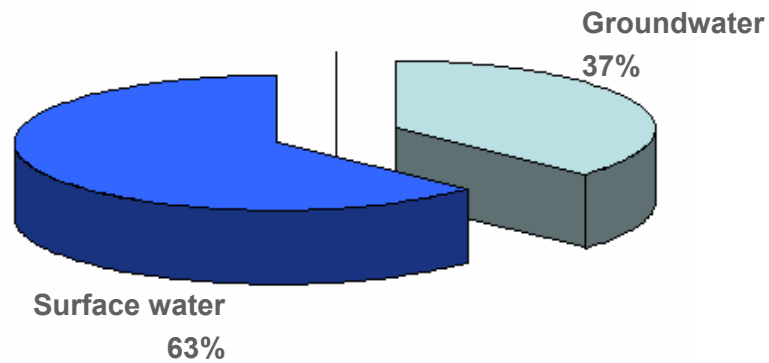
## Water uses



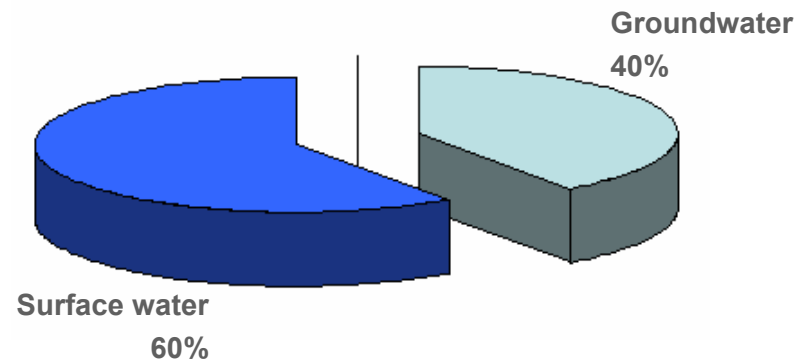
# Introduction

## Drinking water sources

Population served



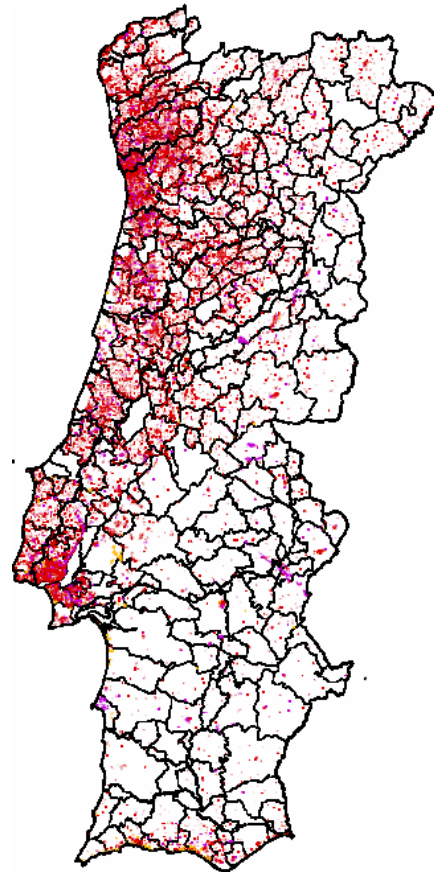
Water consumption



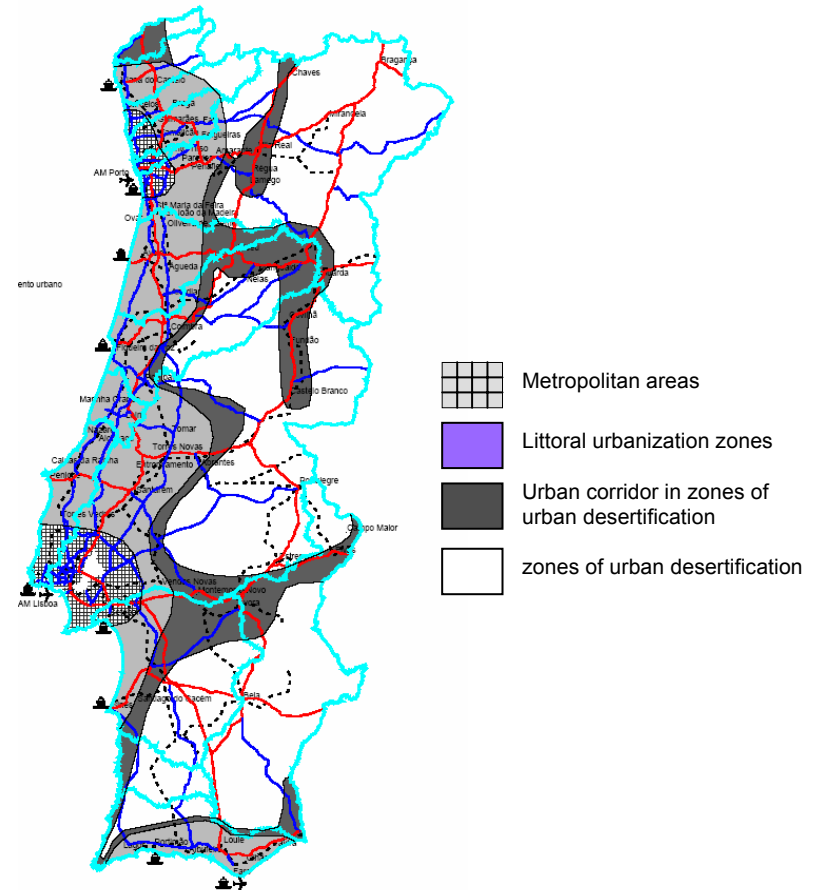


# Introduction

## Territorial planning



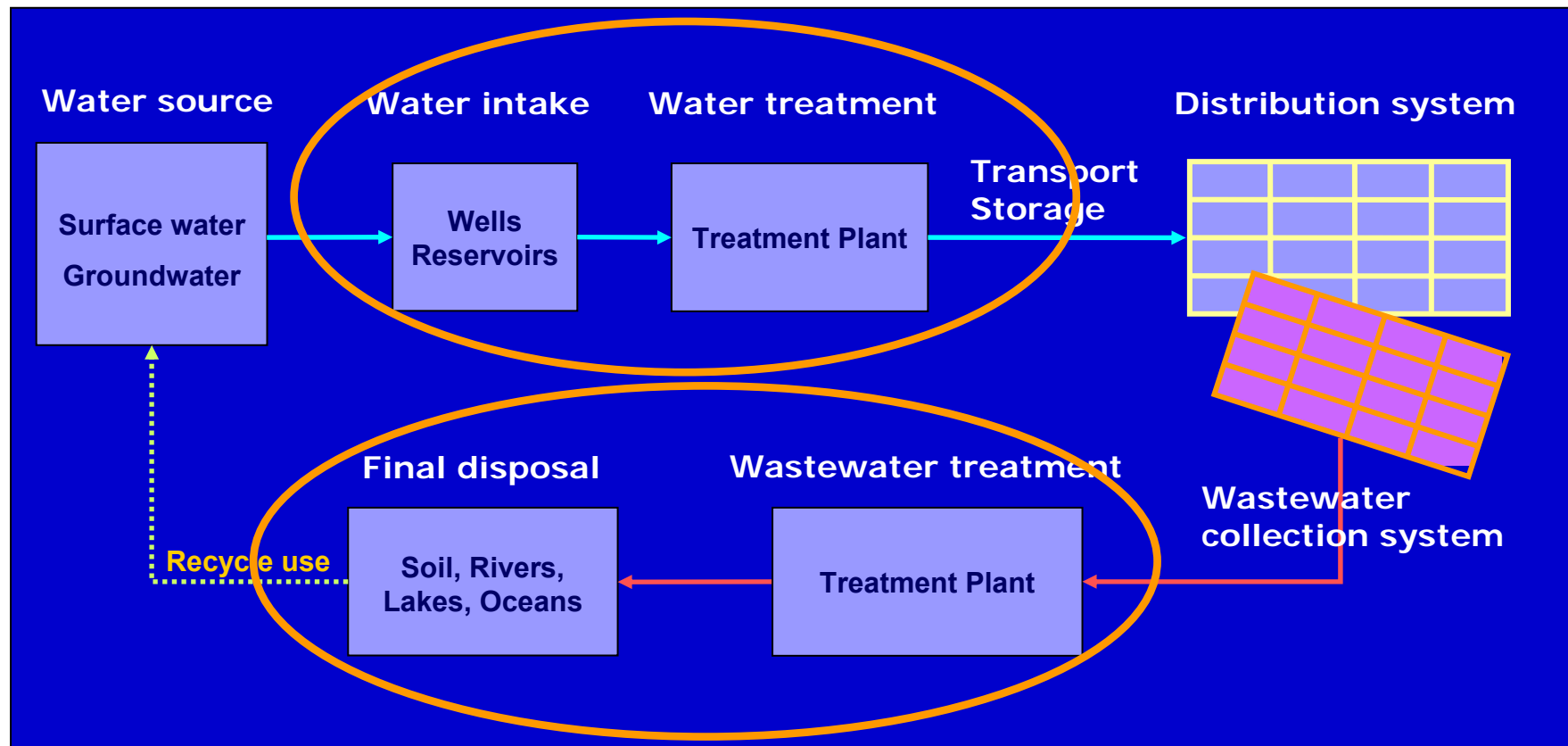
urban spaces



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:

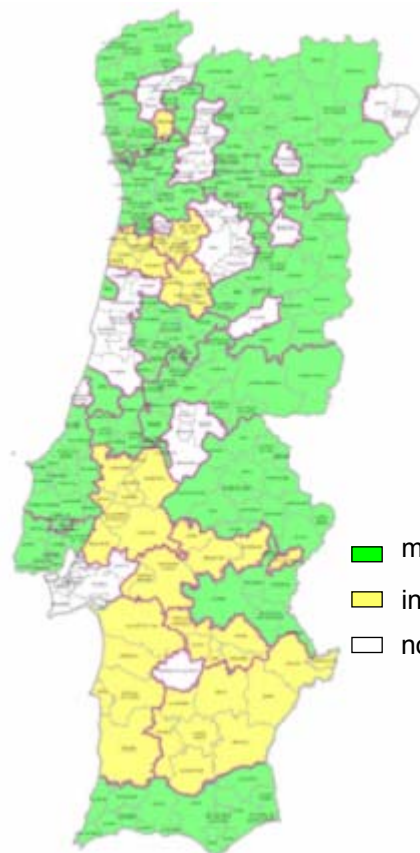
- Multimunicipal systems  
(public companies with capital shared by the State and the Municipalities)
- Integrated municipal systems  
(public companies with exclusive participation of Municipalities)

### ❖ **Municipal** systems:

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

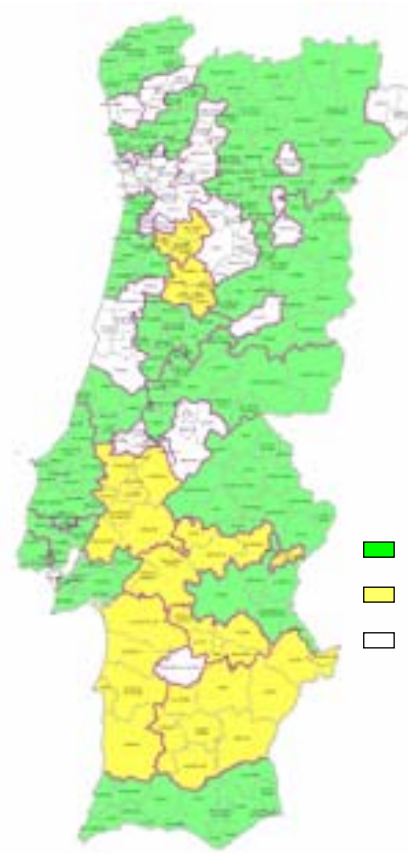
# Institutional framework

## 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 <sup>3</sup> 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

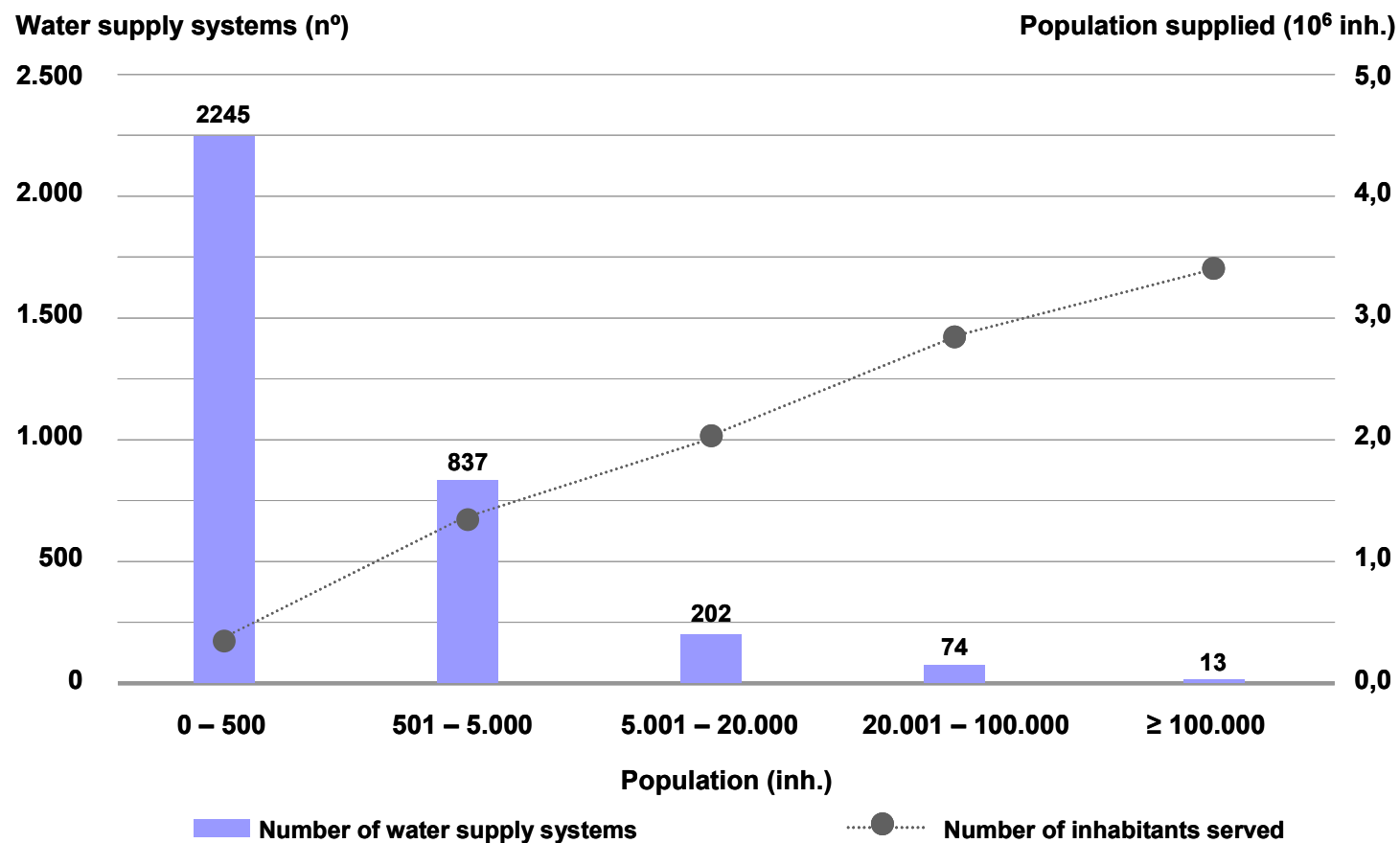
### Sanitation

Wastewater treatment systems	Municipalities		Population	
	Number	%	10 <sup>3</sup> 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

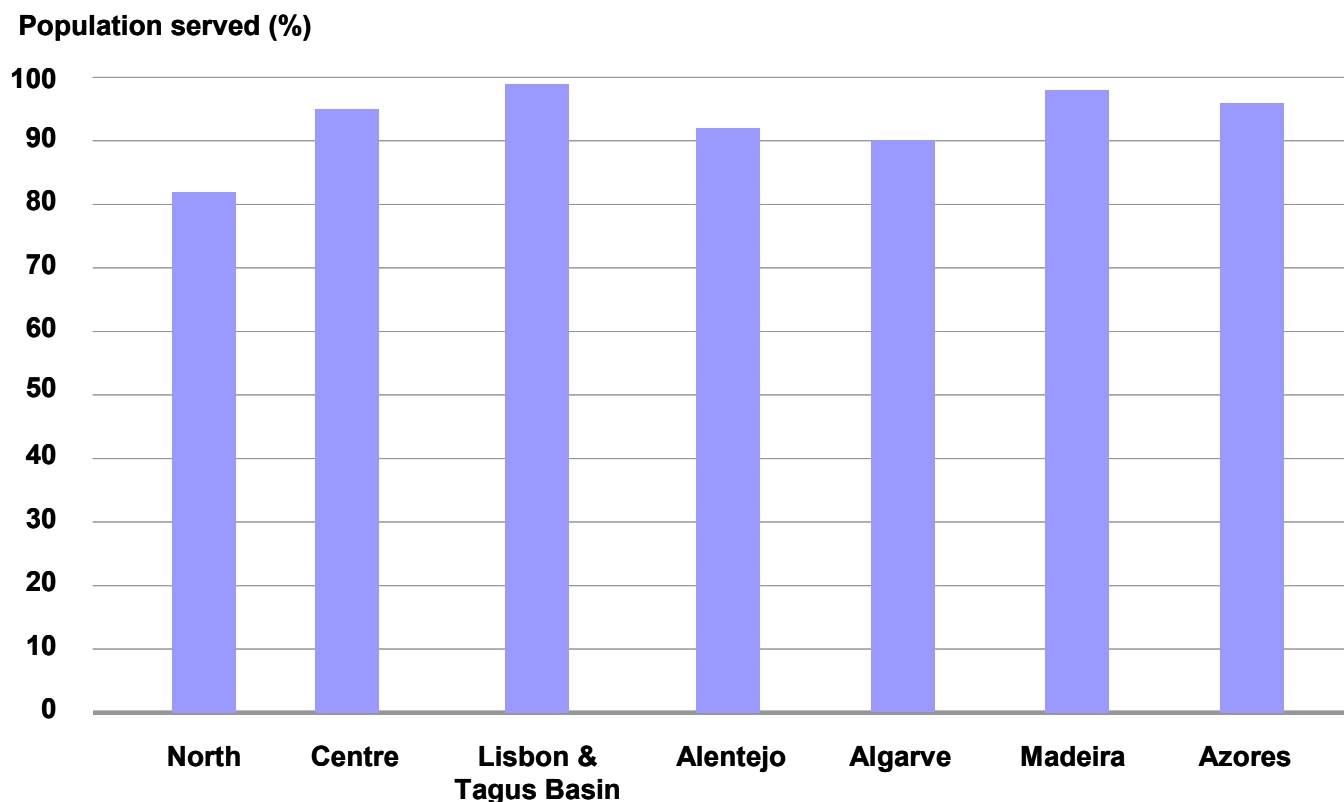




# Statistical data

## Population served (2002)

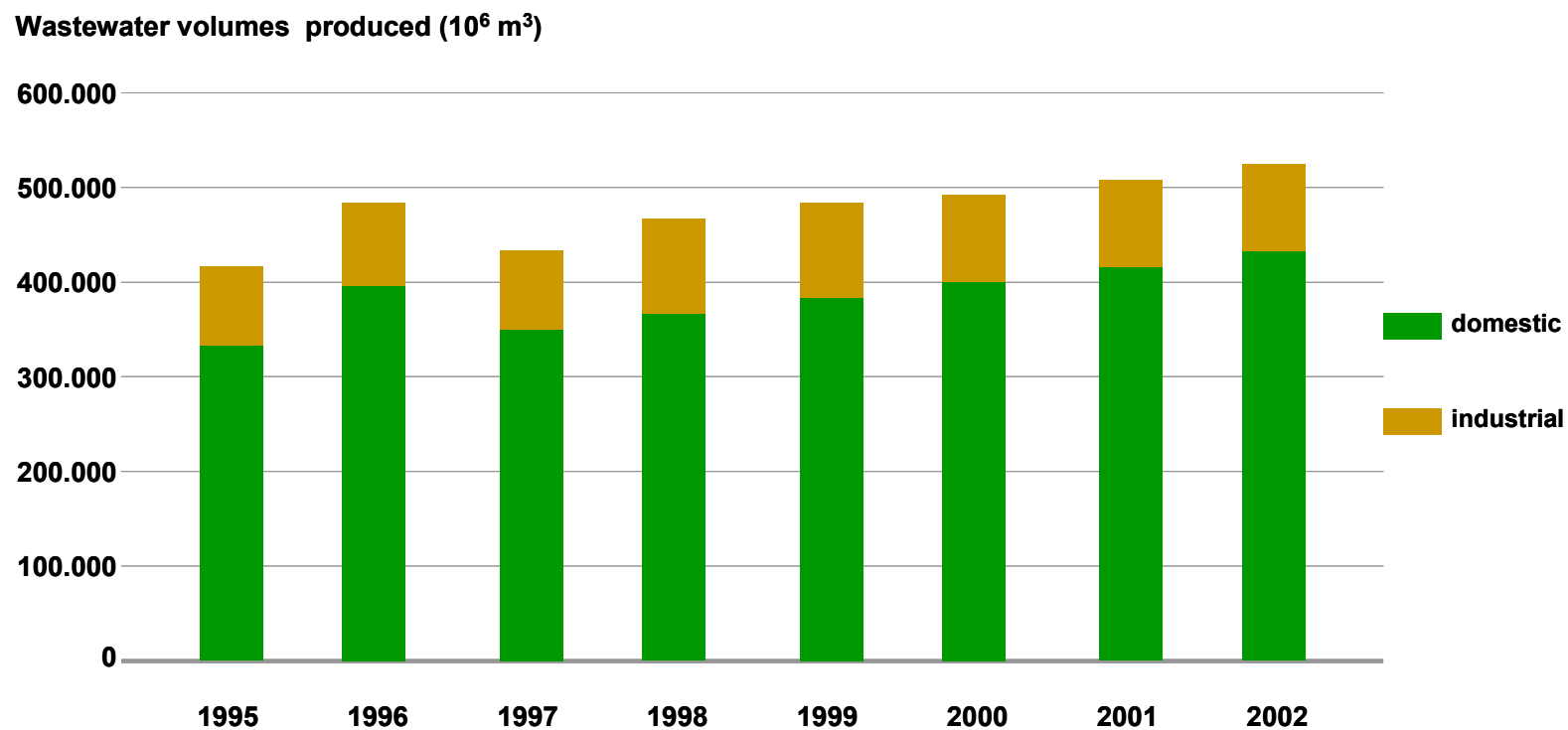
### Water supply



Average (in 2006) – 93%

# Statistical data

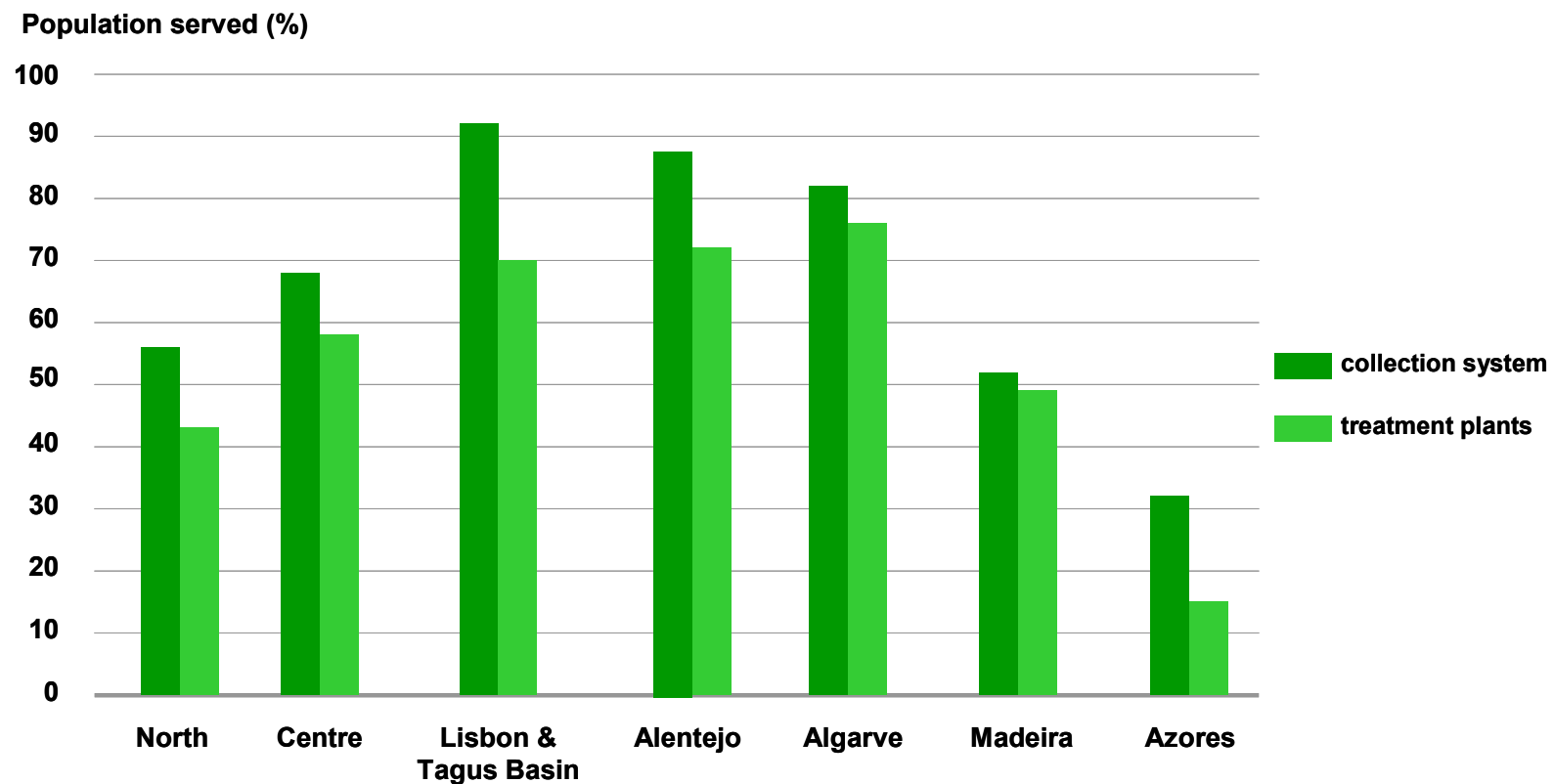
## Wastewater produced



# Statistical data

## Population served (2002)

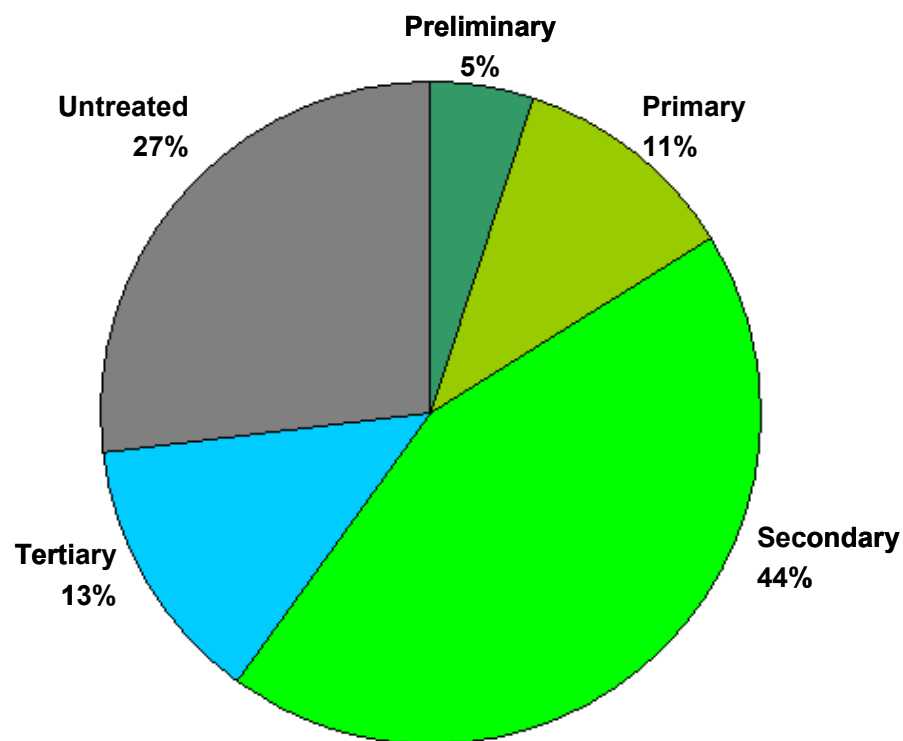
### Sanitation



Average (in 2006) – 80%

# Statistical data

## Wastewater treatment technologies (2002)



# Statistical data

## Tariff systems

Asset management model	Average tariff (Euro/m <sup>3</sup> )		
	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
<b>Average</b>	<b>0,77</b>	<b>0,29</b>	<b>1,06</b>

# Statistical data

## Tariff systems

Tariff (Euro/m <sup>3</sup> )	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
<b>Total</b>	<b>278</b>	<b>278</b>



# 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
<b>Total</b>	<b>320</b>	<b>480</b>	<b>800</b>

# 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
<b>Total</b>	<b>741</b>	<b>1.478</b>	<b>2.218</b>