

# Porto's Pathway to an Efficient, Sustainable and Resilient City

GLOBE EU event on Climate-Resilient Water Management



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Porto.

**2<sup>nd</sup> Biggest City  
of Portugal**

**500,000  
People/day**

**3<sup>rd</sup> Most Densely  
Populated City**

**Focus on Environment  
& Sustainability**

# Porto Environmental Strategy.

:: **Prioritary strategic axes.**

**Porto.**



**Axis 1** – Porto, an aware city committed to a sustainable future

**Axis 2** – Porto, green city, undefeated and resilient

**Axis 3** – Porto, a city plotting an energy revolution

**Axis 4** – Porto, analytical and transparent city

**Axis 5** – Porto, laboratory-city

# 16 Years of Climate Action in Porto.

Porto.

:: Main dates and events.



Signature of Aalborg  
Letter  
2006



Sustainability  
Strategy and  
Covenant of Mayors  
2009



Participation in  
Carbon Closure  
Project  
2014



EU Covenant  
of Mayors for  
Climate & Energy  
2018

Asprela **+++**  
Sustentável

Asprela +  
Sustentável project  
2021

2007

Porto Energy  
Matrix



2010

Sustainable Energy  
Action Plan



2016

ClimAdaPT – Porto  
EMAAC



2020

Integration of energy  
in Águas do Porto



2022

Porto Climate  
Pact







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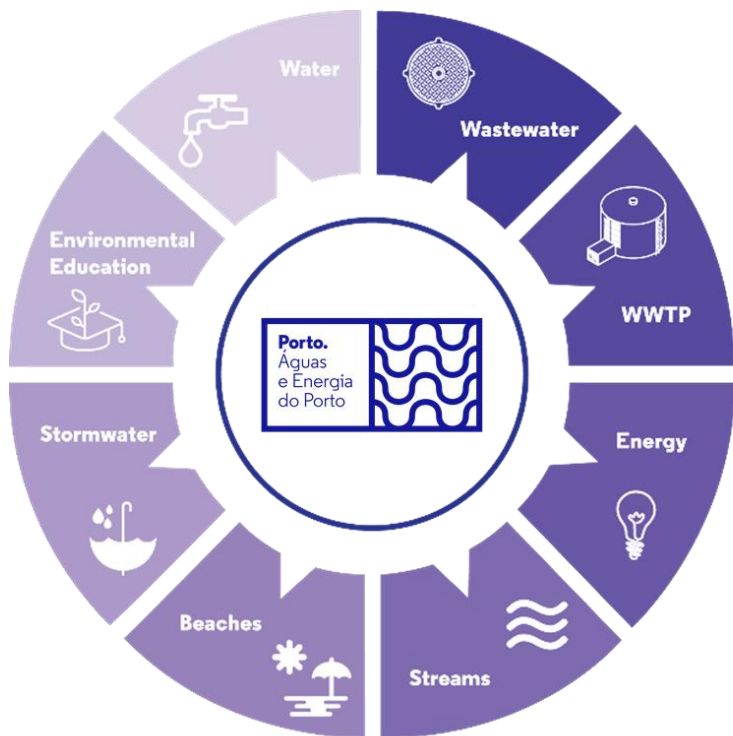
**PORTO.**  
A city shaped by water



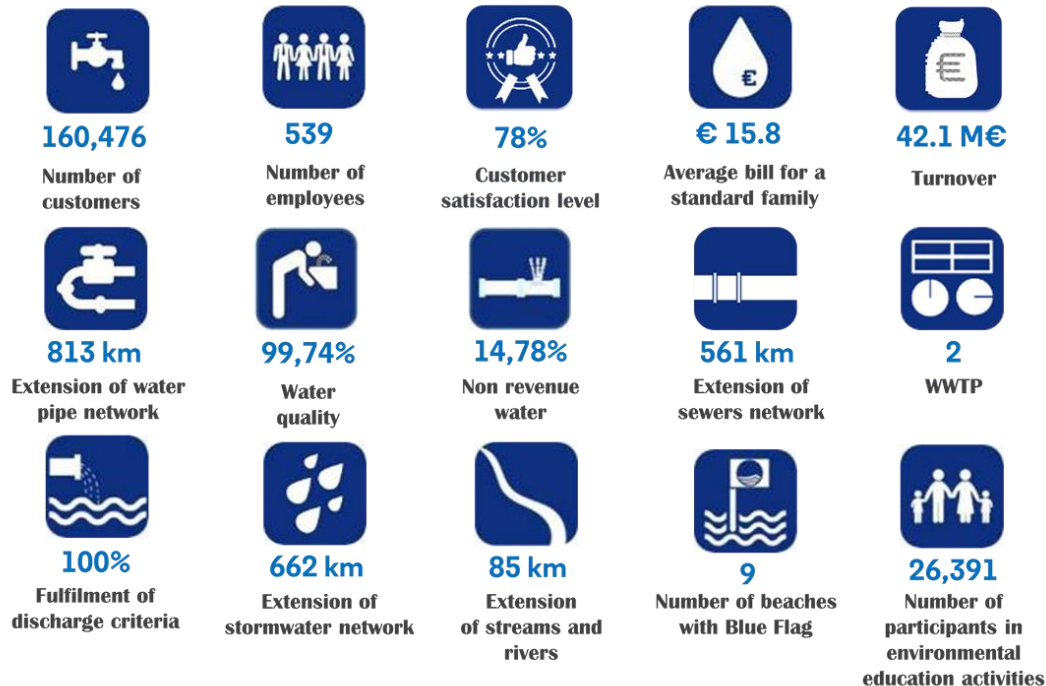
# Integrated Management of Urban Water Cycle.

:: Our 360° vision. Key figures (2022).

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ALL WATER IS ONE WATER





**Porto.**



# Water Efficiency.

# Environmental, Social & Economic Sustainability.

:: Águas e Energia do Porto – Water Supply System Focus.

Porto.

Environmental Concerns – Water Losses

Non-Revenue Water Management

Gravity Transport System – Reducing Energy Consumption

CO2 Emission Reduction



Excellent Water Quality (Water Safety Plan)

Infrastructural Asset Management Policy

Daily Preventive & Reactive Operations

Client Management Center



# Pathway to Water Efficiency.

:: Reducing Leaks on the Water Supply System – a Major Concern.

Porto.



**52,4 %**

**NON-REVENUE WATER INDEX**

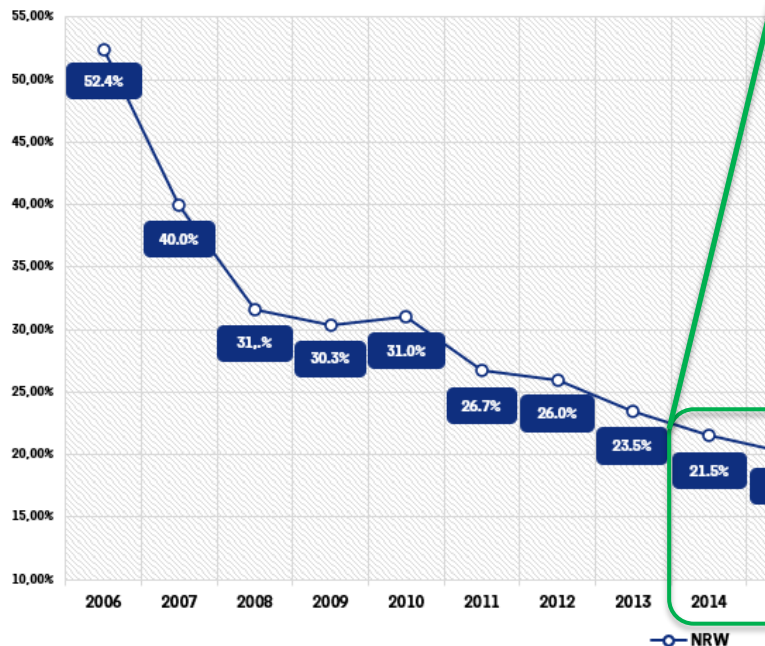
*Oct.2006*

# Pathway to Water Efficiency.

## :: Non-Revenue Water – RESULTS.

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More than **84,3 M€** in accumulated savings





**Water.**

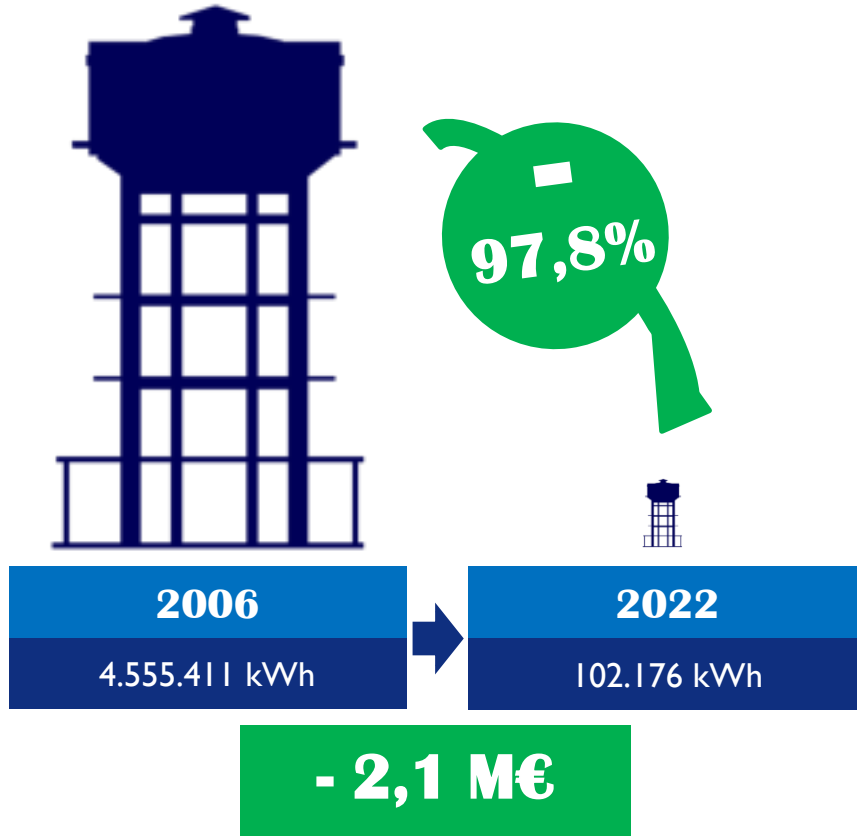


**Energy.**

# Water & Energy Nexus.

:: Project “Porto Gravítico” (2006-2012) – RESULTS.

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- “Deactivation” of 5 old pumping stations
- **Reduction of water pumping costs**
- **Reduction of energy consumed by pumping**
- **Reduction of CO2 emissions** from electric pump groups
- **Relocation and use of human resources** formerly allocated to the pumping stations
- **Increased security and reliability of water supply**



# Water & Energy Sinergies.

:: Nova Sintra Water Tank Campus.

Porto.



**Green roofs of  
Nova Sintra Water  
Tank**

**Solar panels on the  
roofs of Nova Sintra  
Water Tank**





# Water Scarcity.

# Water Scarcity – How to find another options?

:: Reuse of treated wastewater for irrigation and maintenance.

Porto.



WWTP WITH TERTIARY TREATMENT

Freixo WWTP

Sobreiras WWTP



56,614 m<sup>3</sup>

Daily volume of treated wastewater



100%

Compliance with discharge criteria

Circular Economy



Reuse of treated wastewater:  
20% to 100%



# Water Scarcity – How to find another options?

:: Reuse of treated wastewater on Freixo WWTP.

Porto.



## MAIN GOALS:

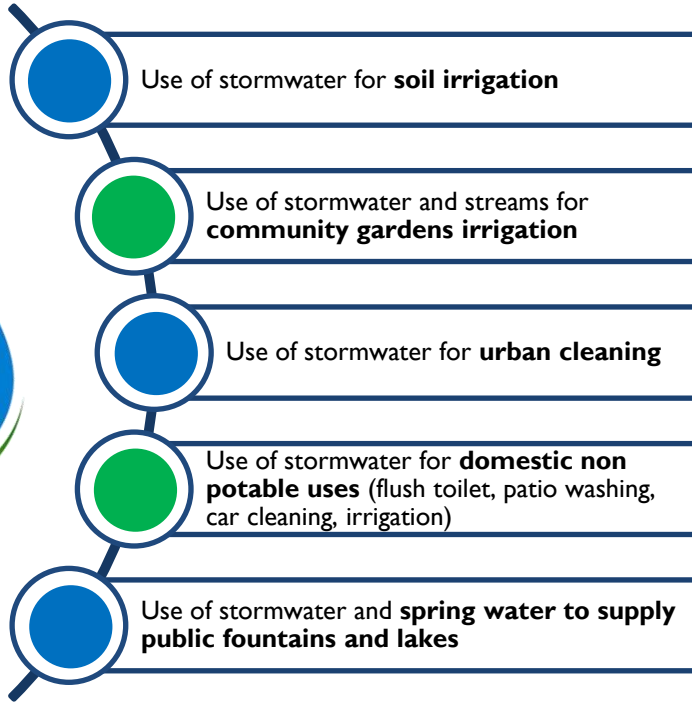
- Produce continuous Water for Reuse from wastewater treatment
- Transform WWTP into Resource Recovery Factories (RRF)
- Become a supplier of:
  - . Irrigations fields (stadiums, municipal garden, parks, central parks, etc.)
  - . Urban cleaning utilities
  - . Continuous urban cleaning
  - . Equipment cleaning (public and private)
  - . Cleaning containers and urban waste collection vehicles



# Water Scarcity – How to find another options?

:: Use of stormwater for non potable uses .

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**Climate Change.**



**Flooding & Resilience.**

# Climate Changes Effects in Porto.

:: Examples.

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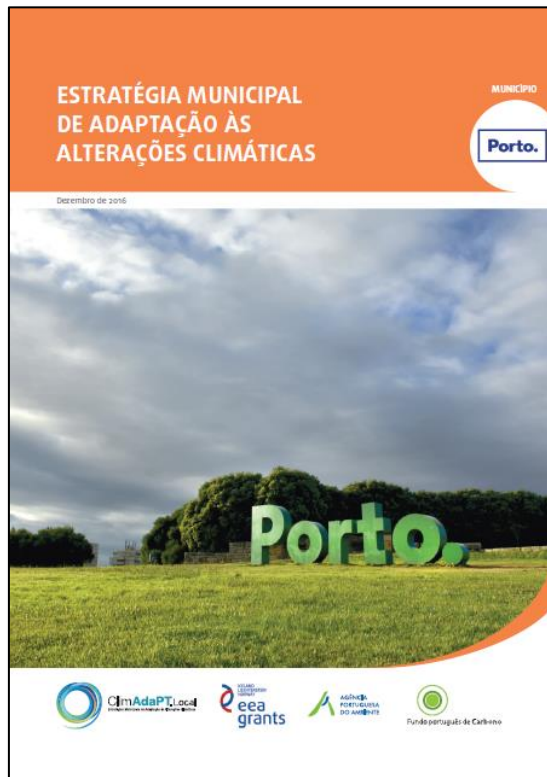










# Porto Climate Projections.

:: Municipal Climate Change Adaptation Strategy (2016).

Porto.

**Porto Climate Projections** – the main climate changes projected for Porto by the end of the 21<sup>st</sup> century



Variável climática	Sumário
	 Diminuição da precipitação média anual
	 Aumento da temperatura média anual, em especial das máximas
	 Subida do nível médio da água do mar
	 Aumento dos fenómenos extremos de precipitação



# Water Adaptation to Climate Change.

:: Water and territory planning – New Porto Master Plan.

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**THINK BLUE TO  
MAKE THE CITY  
GREENER**

# Water Adaptation to Climate Change.

:: Valorization and Rehabilitation Plan of Porto for Streams and Rivers (2022-24).

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The image shows the cover of a document titled 'PVRLA' (Plano de Valorização e Reabilitação das Linhas de Água do Município do Porto). The background is a dark blue map of the city of Porto's water network. In the top left corner, it lists funding sources: 'Iceland Liechtenstein Norway grants' with a logo of three stylized buildings. The title 'PVRLA' is in large white letters, with the subtitle 'Plano de Valorização e Reabilitação das Linhas de Água do Município do Porto' in yellow-green. At the bottom left, there are logos for 'PORTO' (Município do Porto) and 'a3a' (Associação de Municípios do Vale do Ave). At the bottom right, there is a small 'Porto.' logo in a white box.

Main Goal:

Promote the adaptation of rivers and streams in the city of Porto to the expected effects of climate change.

# Water Adaptation to Climate Change.

:: Nature Based Solutions – Asprela Central Park.

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- Funded by the Environmental Fund of the Ministry of the Environment

- The main objective of this project was the flood control to prevent environmental risks;



# Water, Energy & Environment – Sustainability strategy.

## :: Porto Climate Pact (2022).

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### CLIMATE CHANGE – A Major Concern becoming a Global Ambition

- Mitigating these emissions is urgently needed to avoid unpredictable consequences on the natural, economic, and social systems.
- The European Union has been leading the way: member states should set a target of 55% reduction in 2030 and neutrality in 2050.
- At a national level, the Climate Framework Law of 2021 sets a reduction in emissions of at least 55% by 2030, 65% by 2040, and 90% by 2050.
- Reducing GHG emissions requires ambitious measures and high public and private investment, but at the same time represents an opportunity for competitiveness, employment, and social justice.



Municipal ambition to **reduce carbon emissions by 2030** (compared to 2004).

85%

**Reduction of carbon emissions achieved in 2020** in Porto (compared to 2004).



52,2%





**Thank you.**

